PROMISE®
TECHNOLOGY, INC.

SMARTSTOR
NS4300N
Product Manual

Version 1.5 SR2/3

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Chapter 1: Introduction to SmartStor

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- Protocol Support (page 2)
- Key Benefits (page 2)
- Specifications (page 3)
- Compatible Backup Software (page 4)
- Client OS Support (page 4)
- Browser Support (page 4)

Promise Technology's SmartStor NS4300N is a network attached storage (NAS) solution for external storage targeted for small and medium business (SMB) users and small office/home office (SOHO) users.

With a NAS product, users can save their work and have access to files over the network without having to carry around a disk drive or memory stick. The Administrator can manage access privileges for greater security. Multiple backup and synchronization functions protect your data.

About This Manual

This *Product Manual* describes how to setup, use, and maintain the SmartStor NS4300N. It also describes how to use the NAS Setup Wizard, SmartSYNC utility, and Promise Advanced Storage Manager (PASM) software.

This manual includes a full table of contents, chapter task lists, and numerous cross-references to help you find the specific information you are looking for.

Also included are four levels of notices:

Note

A *Note* provides helpful information such as hints or alternative ways of doing a task.

Important

An *Important* calls attention to an essential step or point required to complete a task. Important items include things often missed.

Caution

A *Caution* informs you of possible equipment damage or loss of data and how to avoid them.

Warning

A *Warning* notifies you of probable equipment damage or loss of data, or the possibility of physical injury, and how to avoid them.

Architecture

The SmartStor NS4300N's architecture is based on the Freescale MPC8343 microprocessor and the Promise PDC40719 Serial ATA RAID Controller. The Gigabit Ethernet port is used for the data transfer and management. The USB ports are used for a printer, expansion drives, and Uninterruptable Power Supply (UPS).

Protocol Support

SmartStor NS4300N supports:

- Windows 2000, XP Professional, 2003 Server; and Vista Business, Enterprise, and Ultimate clients through SMB and CIFS protocols
- UNIX and Linux clients through the NFS protocol
- Macintosh clients through the AFP protocol
- FTP clients through the FTP protocol
- DLNA clients through UPnP protocol with an optional plug-in
- Up to 16 concurrent connections

Key Benefits

- Easy-to-use browser-based management interface
- Data sharing over the network
- One-touch backup of designated file folders on client PC
- Snapshot backup for real-time image of the file system
- Remote NAS-to-NAS synchronization and backup
- Network print server with USB printer
- User, Group, and Quota management
- UPS support with automated shutdown
- Heterogeneous environment: Windows, UNIX, Linux, and Macintosh

- SmartSYNC Backup Utility
- Setup Wizard Utility

Specifications

- Disk drive support:
  - Four 1.5 Gb/s or 3 Gb/s SATA 3.5-inch disk drives
  - Conforms to Serial ATA 1.0 specification and Serial ATA II: Extensions to Serial ATA 1.0 specification (SATA II, phase I specification)
  - SATA specification of 3 Gb/s transfers with CRC error-checking
  - Hot-swapping of disk drives
  - Tagged command queuing
  - Native command queuing
  - Drive roaming among channels
  - S.M.A.R.T. status polled every 15 minutes
  - Online capacity expansion
  - RAID Level Migration
  - Hot spare drives
  - RAID Volume rebuilding
  - Gigabyte rounding
  - Background rebuilding
- RAID level support: RAID 0, 1, 5, and 10
- Large file system support up to 4 TB
- Unicode file name support
- SATA RAID Controller: Promise PDC40719
- Server on a Chip: Freescale MPC8343, 400MHz
- Networking: 10/100/1000 Mb/s Ethernet Port on motherboard
- USB ports: USB 2.0, up to 480 Mb/s, two Type-A connectors
- File protocols: SMB, CIFS, FTP, AFP, NFS
- Flash Memory: 16 MB, 16-bit
- Memory: 128 MB DDR SDRAM
- Power Supply: 200-watt ATX with PFC
- Network Time Protocol (NTP) client
- Error logging
- Phone home capability (email notification) to contact IT staff

- Hardware monitoring of:
  - Fan
  - Temperature
  - Power
  - Disk status
  - One-Touch button
  - Enclosure status

Compatible Backup Software

SmartStor NS4300N is compatible with the following backup software products:

- VERITAS® NetBackup/Backup Exec™
- CA BrightStor™ARCserve/Enterprise
- LEGATO® NetWorker™
- Syncsort Backup Express
- Microsoft Backup Software for Windows 95/98/NT/2000/ME/XP
- Dantz Retrospect for Macintosh

Client OS Support

Microsoft Windows:

- Vista Business, Enterprise, and Ultimate; Server 2003, XP Professional, 2000
- Supports Intel IA32, AMD64 and Intel EM64T platforms

UNIX/Linux:

- Red Hat Enterprise Linux 3.0 (AS/WS/ES)
- Red Hat Enterprise Linux 4.0 (AS/WS/ES)
- SuSe Linux Enterprise 10 (Server/Desktop)

Apple Macintosh:

- MacOS X

Browser Support

Use the latest version of the following browsers to manage the SmartStor NS4300N:

- Internet Explorer
- Netscape Navigator
- Mozilla
- Firefox
- Safari (MacOS X)

Chapter 2: Installation and Setup

- Unpacking the SmartStor NS4300N (page 5)
- Installing Disk Drives (page 7)
- Connecting to the Network (page 7)
- Connecting the Power (page 8)
- Installing the Software (page 8)
- Optional. Selecting Your Network (page 12)
- Setting up the SmartStor (page 13)
- Connecting to PASM (page 17)
- Shutting Down the SmartStor (page 20)

Unpacking the SmartStor NS4300N

The SmartStor NS4300N box contains the following items:

- SmartStor NS4300N Unit
- *Quick Start Guide*
- Screws for disk drives (16, including 4 spares)
- Ethernet cable
- 1.5m (4.9 ft) Power cord
- CD with NAS Setup Wizard, SmartSYNC software, and Configuration Tool, *Product Manual* and *Quick Start Guide*

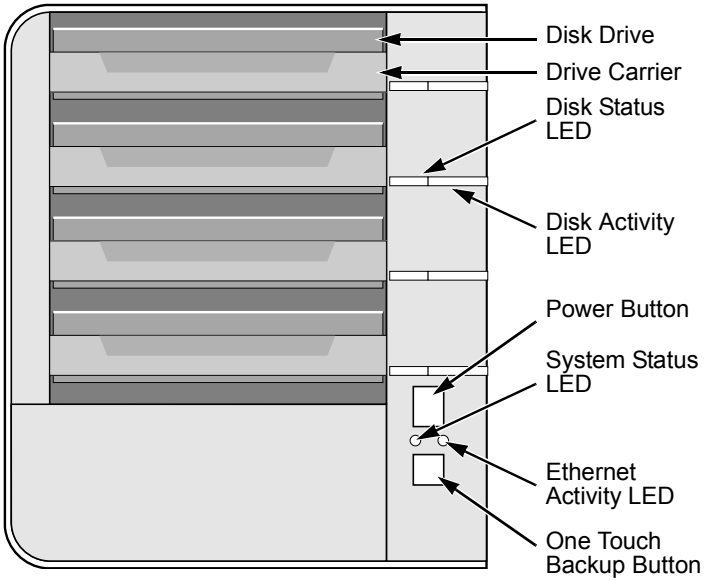
Warning

The electronic components within the SmartStor are sensitive to damage from Electro-Static Discharge (ESD). Observe appropriate precautions at all times when handling the SmartStor or its subassemblies.

Important

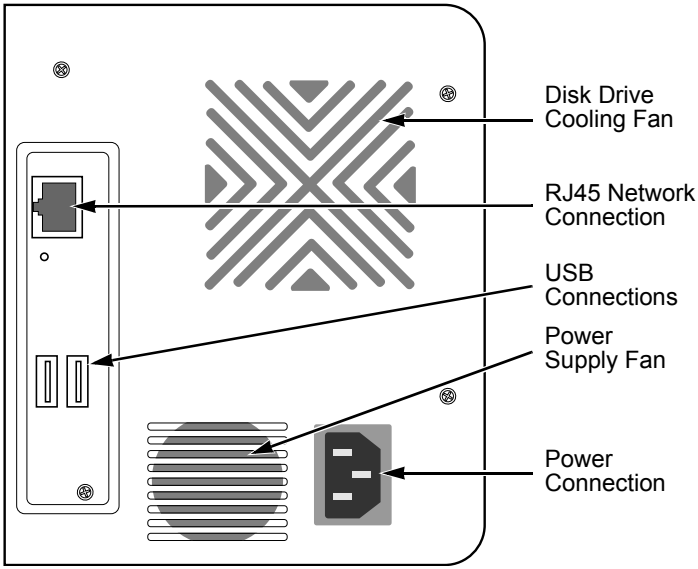
To configure the SmartStor, you must install the software onto a PC running Windows Vista Business, Enterprise or Ultimate; 2003 Server, XP Professional, or 2000.

Figure 1. SmartStor NS4300N Front View



Note: This SmartStor is shown without the front door.

Figure 2. SmartStor NS4300N Rear View



Installing Disk Drives

You can populate the SmartStor NS4300N with SATA 1.5 Gb/s or 3.0 Gb/s disk drives. For optimal performance, install disk drives of the same model and capacity. Your disk drives will become a RAID Volume on the SmartStor.

To install disk drives:

1. Open the door on the front of the SmartStor enclosure.
2. Pull a disk drive carrier from the enclosure. See Figure 1.
3. Carefully lay the disk drive into the drive carrier, so that the screw holes on the sides of the carrier align with the screw holes in the drive.
4. Insert the screws through the holes in the drive carrier and into the sides of the disk drive.
   - Install only the counter-sink screws supplied with the SmartStor.
   - Install four screws per drive.
   - Snug each screw. Be careful not to over-tighten.
5. Reinstall the drive carrier into the SmartStor enclosure.

   Repeat steps 2 through 5 until all of your disk drives are installed.
6. Close the door on the front of the SmartStor.

Connecting to the Network

To connect the SmartStor to your network:

1. Attach one end of the network cable to the RJ45 network connection. See Figure 2.
2. Attach the other end of the network cable to your Ethernet hub or switch.

Important

If there are multiple networks at your facility, note the network to which you connect the SmartStor. You will need this information during the setup process.

Connecting the Power

To power the SmartStor:

1. Attach the power cord on the back of the SmartStor enclosure and plug the other end into the power source. See Figure 2.
2. On the front of the SmartStor, press the power button. See Figure 1.

   It takes about a minute to boot the SmartStor. When fully booted:

   - The System Status LED turns green. See Figure 1.
   - The buzzer beeps one time.

Installing the Software

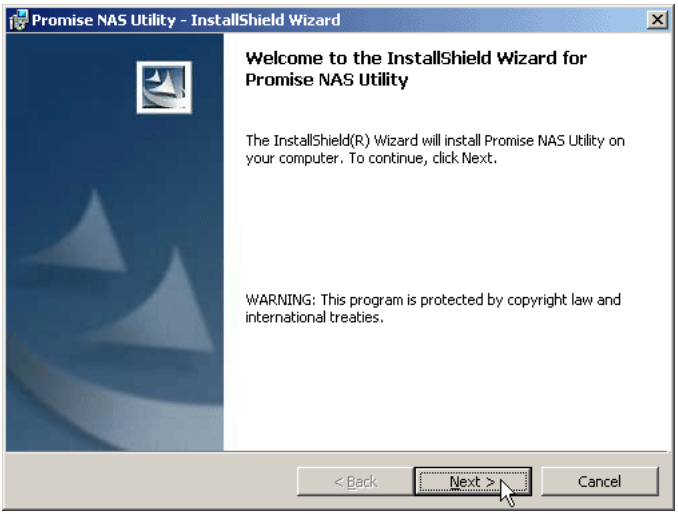
When you install the software onto your Windows PC, three new items are added to the Windows Start menu:

- NAS Setup Wizard – Sets up the SmartStor
- SmartSYNC – Connects your PC to the SmartStor, sets up network drives on your PC, and performs backups
- Configuration Tool – Ensures that the SmartStor, NAS Setup Wizard, and SmartSYNC are all on the same network

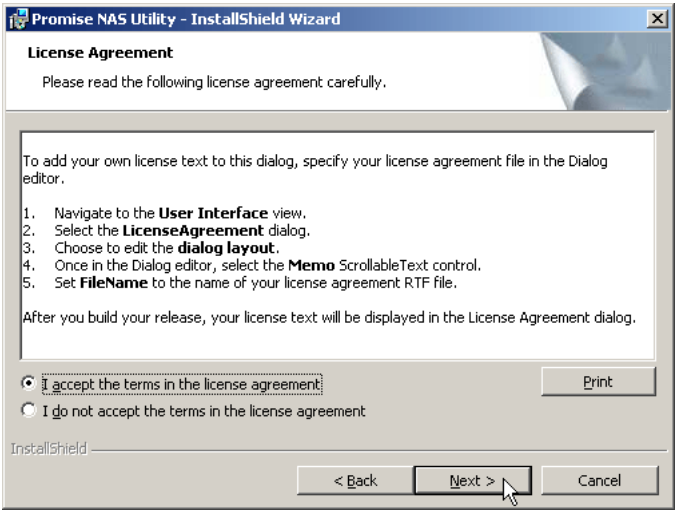
To install the software:

1. Insert the CD into your CDROM.
2. Double-click the **NAS Utility Installer** icon.

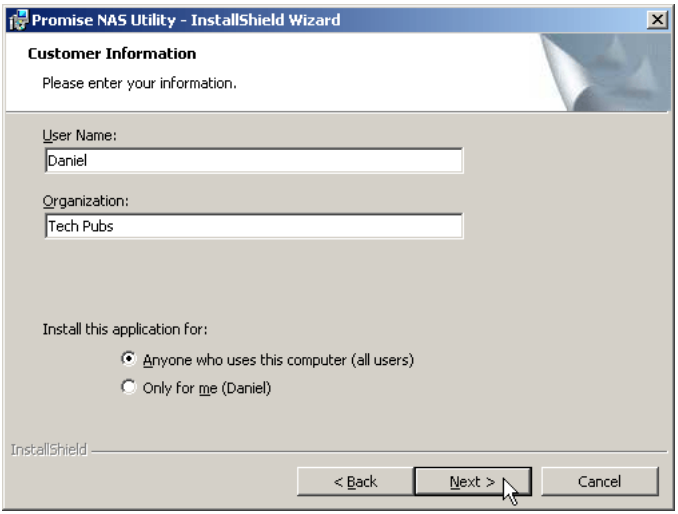
   The first installer screen appears.


Promise NAS Utility - InstallShield Wizard
Welcome to the InstallShield Wizard for Promise NAS Utility
The InstallShield(R) Wizard will install Promise NAS Utility on your computer. To continue, click Next.
WARNING: This program is protected by copyright law and international treaties.
< Back
Next >
Cancel

3. Click the **Next** button to begin installation.
   The License Agreement screen appears.


Promise NAS Utility - InstallShield Wizard
License Agreement
Please read the following license agreement carefully.
To add your own license text to this dialog, specify your license agreement file in the Dialog editor.
1. Navigate to the User Interface view.
2. Select the LicenseAgreement dialog.
3. Choose to edit the dialog layout.
4. Once in the Dialog editor, select the Memo ScrollableText control.
5. Set FileName to the name of your license agreement RTF file.
After you build your release, your license text will be displayed in the License Agreement dialog.
I accept the terms in the license agreement
I do not accept the terms in the license agreement
Print
InstallShield
< Back
Next >
Cancel

4. Click the “I accept the terms...” option, then click the **Next** button.
   The Customer Information screen appears.



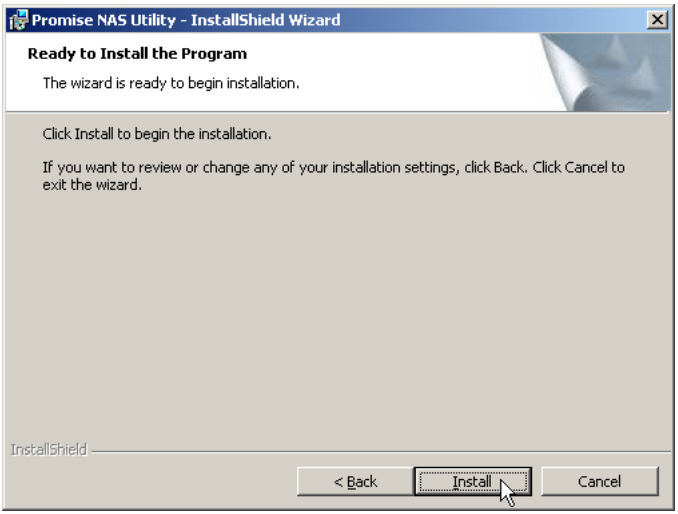
5. Type a user name and organization name into the respective fields or leave them unchanged to accept the default entries.

Click the Install option for:

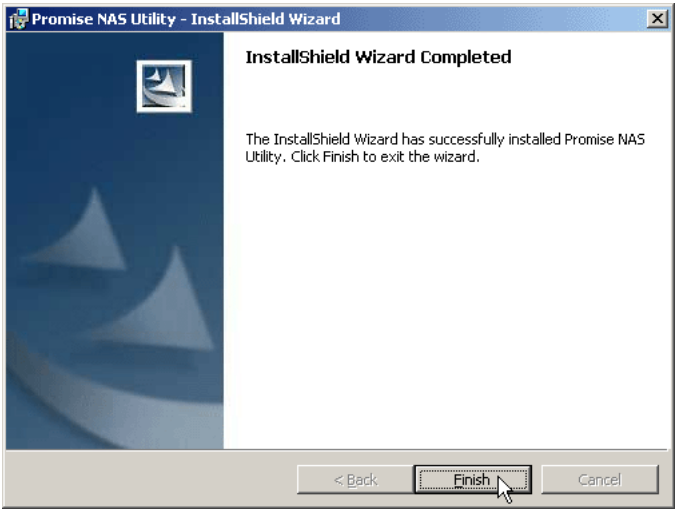
- Anyone who uses this computer (all users)
- Only for me (the current user)

Click the **Next** button.

The Ready to Install screen appears.


Promise NAS Utility - InstallShield Wizard
Ready to Install the Program
The wizard is ready to begin installation.
Click Install to begin the installation.
If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.
InstallShield
< Back
Install
Cancel

6. Click the **Install** button to proceed with installation.
   When the installation is finished, the final installation screen appears.


Promise NAS Utility - InstallShield Wizard
InstallShield Wizard Completed
The InstallShield Wizard has successfully installed Promise NAS Utility. Click Finish to exit the wizard.
< Back
Finish
Cancel

7. Click to **Finish** button to close the installer.

Optional. Selecting Your Network

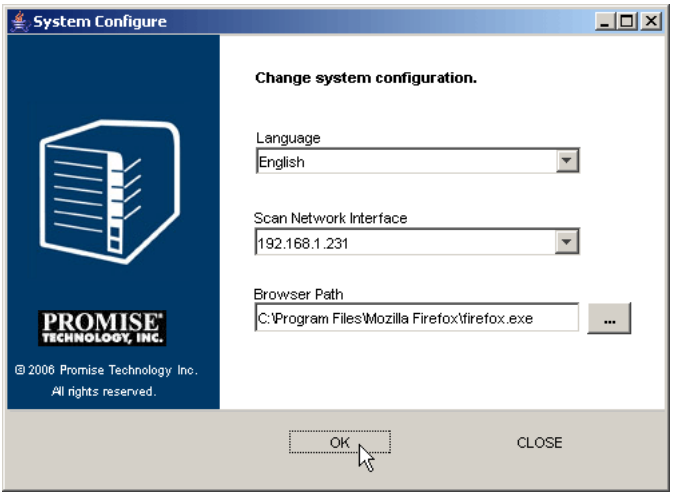
If your PC has only one network connection, skip to “Setting up the SmartStor” on page 13.

If your PC has multiple network connections, you must ensure that the SmartStor, NAS Setup Wizard, and SmartSYNC utility are all connected to the same network. The Configuration Tool performs that function.

To make your network selection:

1. From the Windows Start menu, choose *Programs*, then *Promise NAS Utility*, and then *Configuration Tool*.

   The Change system configuration screen appears.



2. From the Language dropdown menu, choose the language you prefer.
3. From the Scan Network Interface dropdown menu, choose the IP address for the network where you installed the SmartStor.

   The IP addresses in this menu belong to the network interface cards (NICs) in your PC. You must select the NIC that is connected to the network where you installed the SmartStor.
4. Optional. Click the **...** button to navigate to the browser you want to use as with the SmartStor.

   The default browser appears in the Browser Path field. Change this setting only if you want use a different browser.
5. Click the **OK** button.
6. In the System Message, click **OK** to finish your network selection.

Setting up the SmartStor

Caution

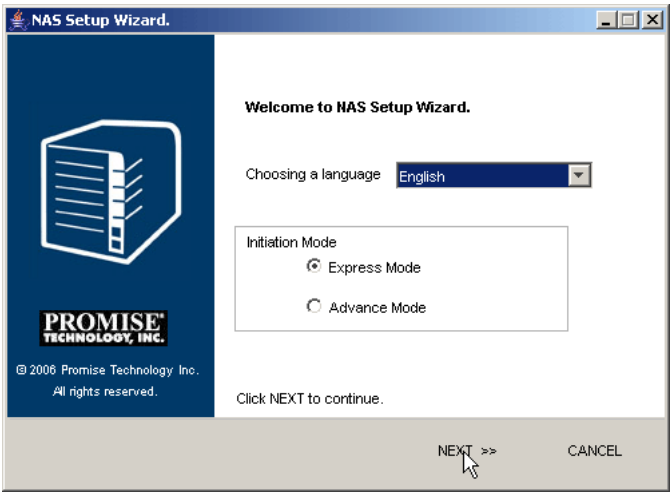
The NAS Setup Wizard will overwrite all existing settings on the SmartStor. In most cases, you should only run the NAS Setup Wizard one time—when you first set up your SmartStor.

The NAS Setup Wizard performs the setup procedures on your SmartStor.

To set up your SmartStor:

1. From the Windows Start menu, choose *Programs*, then *Promise NAS Utility*, then *NAS Setup Wizard*.

   The NAS Setup Wizard welcome screen appears.



2. From the Choosing a language dropdown menu, choose the language you prefer.
3. Choose an Initiation Mode.

   Click the *Express Mode* option if ALL of these conditions apply:

   - You have a DHCP server on your network with addresses available.
   - You want data protection for your RAID Volume.
   - You want to use date and time settings from your PC.

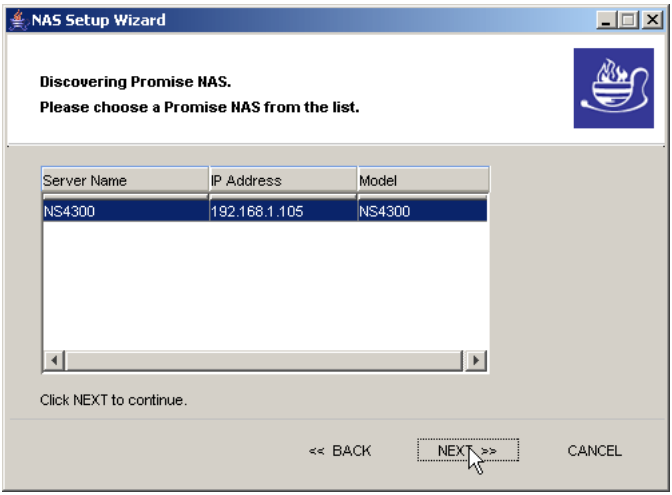
Click the *Advanced Mode* option if one or more of these conditions apply:

- You do not have a DHCP server on your network.
- You have a DHCP server but no addresses are available.
- You want to set the IP address manually.
- You want maximum capacity RAID 0 Volume.
- You want to set date and time manually.

The rest of the setup instructions describe Express mode. For setup instructions using Advanced mode, see “Appendix A: Setup Wizard Advanced Mode” on page 137.

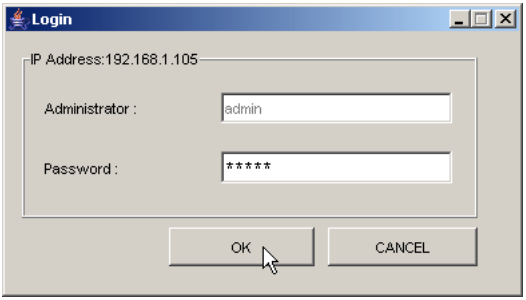
4. Click **Next >>** to continue.

   The Discovering Promise NAS screen appears. The SmartStor is listed as a *NS4300*.



5. Highlight the SmartStor you are initiating, then click **Next >>** to continue.

The Login dialog box appears.



6. Type **admin** into the Password field, then click **OK**.

   The password is case sensitive.

   The Select a Device Name screen appears.

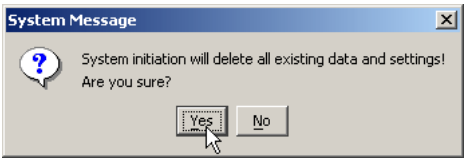
NAS Setup Wizard.
Assigning a network device name.
The Wizard has created a shared folder "PUBLIC" for you.
Please enter a Device Name for the shared folder.
Device Name :
Z:
Click NEXT to continue.
<< BACK
NEXT >>
CANCEL

7. Select a Device Name (drive letter) to represent the default folder on the SmartStor as a network drive on your PC.

   The list begins with Z and goes in reverse alphabetical order.

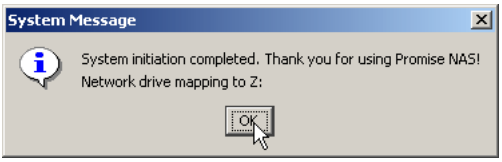
   Click **Next >>** to continue.

The System Message appears.



8. Click the **Yes** button to begin the system initiation.

   The Wizard requires several minutes to configure your SmartStor, depending on the size of your disk drives. When the Wizard is done another System Message appears.

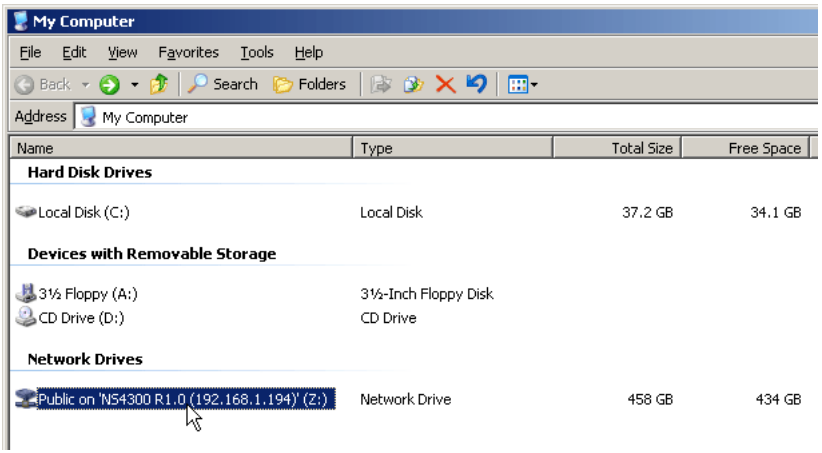


9. Click **OK** to finish the system initiation.

   The Wizard creates a RAID Volume and a default folder called *Public*.

   If two disk drives are installed in your SmartStor, the Wizard creates a RAID 1 Volume. If three or four disk drives are installed, the Wizard creates a RAID 5 Volume.

   The Public folder on the SmartStor appears under My Computer as a network drive.


My Computer
File Edit View Favorites Tools Help
Back Search Folders
Address My Computer
Name Type Total Size Free Space
Hard Disk Drives
Local Disk (C:) Local Disk 37.2 GB 34.1 GB
Devices with Removable Storage
3½ Floppy (A:) 3½-Inch Floppy Disk
CD Drive (D:) CD Drive
Network Drives
Public on 'NS4300 R1.0 (192.168.1.194)' (Z:) Network Drive 458 GB 434 GB

You can now copy files to and from the folder on the SmartStor.

Connecting to PASM

The Promise Advanced Storage Manager (PASM) software is factory-installed on the SmartStor system. PASM runs in the browser on your PC. You can access PASM:

- Directly in your browser. See page 18.
- Through SmartSYNC. See page 19.

Browser Support

Choose one of the following browsers to use with PASM:

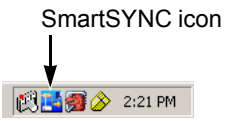
- Internet Explorer
- Mozilla
- Firefox
- Netscape Navigator
- Safari (MacOS X)

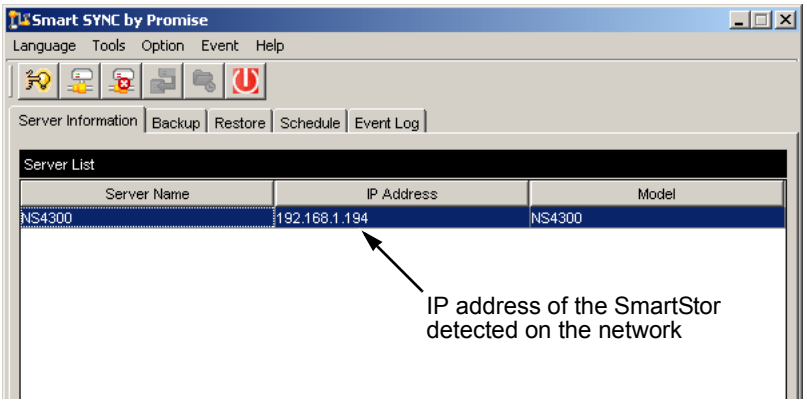
Finding the SmartStor's IP Address

To access the SmartStor in your browser, you must know the SmartStor's IP address. Use SmartSYNC for this purpose.

1. From the Windows Start menu, choose *Programs*, then *Promise NAS Utility*, and then *SmartSYNC*.
2. To open the SmartSYNC window, in the Windows application tray (lower right corner of the screen), double-click the **SmartSYNC** icon.

   The SmartSYNC screen appears with the Server Information tab displayed. The IP address of the SmartStor shown in the Server List.





PASM in your Browser

To log into PASM in your browser:

1. Start your Browser.
2. In the Browser address field, type in the IP address of the SmartStor.

   See “Finding the SmartStor’s IP Address” on page 17.

   Note that the IP address shown below is only an example. The IP address you type into your browser will be different.

   - PASM uses an HTTP connection . . . . . .http://
   - Enter the SmartStor’s IP address 192.168.1.194

   Together, your entry looks like this: **http://192.168.1.194**

   The PASM login screen displays.

3. Type the user name and password in the respective fields, then click the **Login** button.

   The default user name is **admin**. The default password is **admin**.

   The user name and password are case sensitive.

   For more information about PASM, see “Chapter 6: PASM” on page 59.

PASM in SmartSYNC

To log into PASM in SmartSYNC:

1. In the Windows application tray (lower right corner of the screen), double-click the **SmartSYNC** icon (right).

   SmartSYNC opens with the Server Information tab displayed.

2. Click the **Open GUI** button (right).

   Your default browser starts and the PASM login screen displays.

3. Type the user name and password in the respective fields, then click the **Login** button.

   The default user name is **admin**. The default password is **admin**.

   The user name and password are case sensitive.

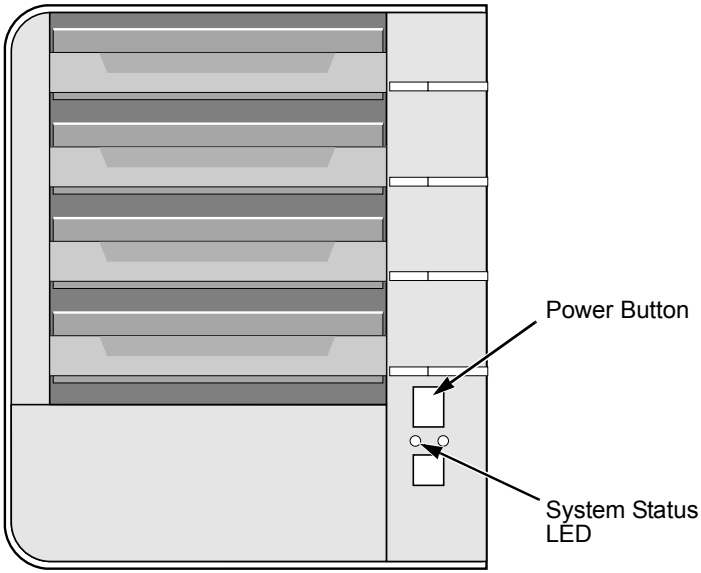
   For more information about PASM, see “Chapter 6: PASM” on page 59.

Shutting Down the SmartStor

To shut down the SmartStor, press and hold the power button for five seconds. See Figure 3. The system status LED turns red, then goes dark.

To restart the SmartStor, press the power button again.

Figure 3. Press and hold the Power button for 5 seconds



Note: This SmartStor is shown without the front door.

Chapter 3: Connecting to the SmartStor

- Setting up a Network Drive on a Windows PC (page 21)
- Setting up a Network Drive on a UNIX or Linux PC (page 24)
- Setting up a Network Drive on a Macintosh PC (page 27)
- Connecting a USB Printer to SmartStor (page 31)
- Setting up the Print Server on SmartStor (page 32)
- Setting up Windows Printing (page 32)
- Setting up Linux Printing (page 34)
- Setting up Macintosh Printing (page 37)
- Connecting a USB Drive (page 39)
- Disconnecting a USB Drive (page 42)

To copy files to and from a folder on the SmartStor, you must make the folder a network drive on your PC.

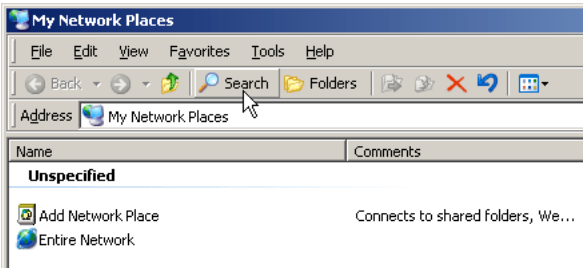
To use the SmartStor as a print server, you must connect the USB printer, enable SmartStor's print server, and set up printing on your PC.

Setting up a Network Drive on a Windows PC

You can also use SmartSYNC for this purpose, see "Connecting a Network Drive" on page 52. If your PC does not have SmartSYNC, use the following procedure to setup a Network Drive with My Network Places.

To setup a network drive:

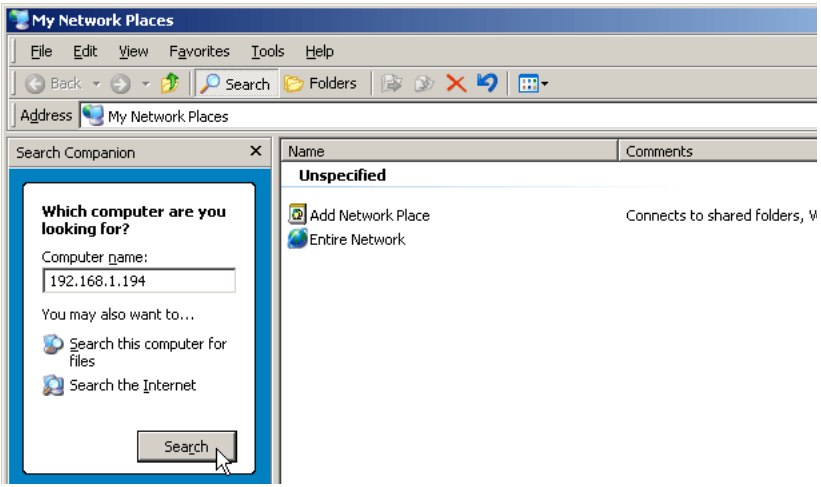
1. On the Windows desktop, double-click the **My Network Places** icon.
2. Click the **Search** button in the toolbar.



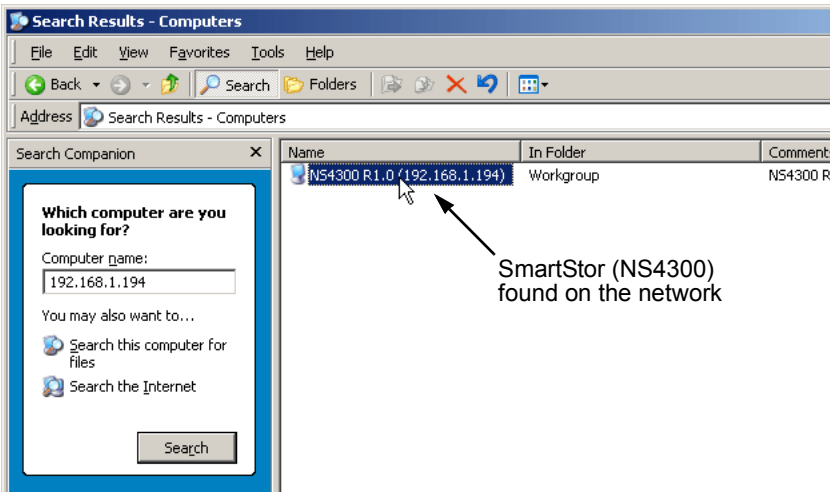
If the Search button is not shown, from the View menu, choose *Toolbars*, then *Standard Buttons*.

3. In the Computer name field, type the IP address of the SmartStor and click the **Search** button.

See “Finding the SmartStor’s IP Address” on page 17.

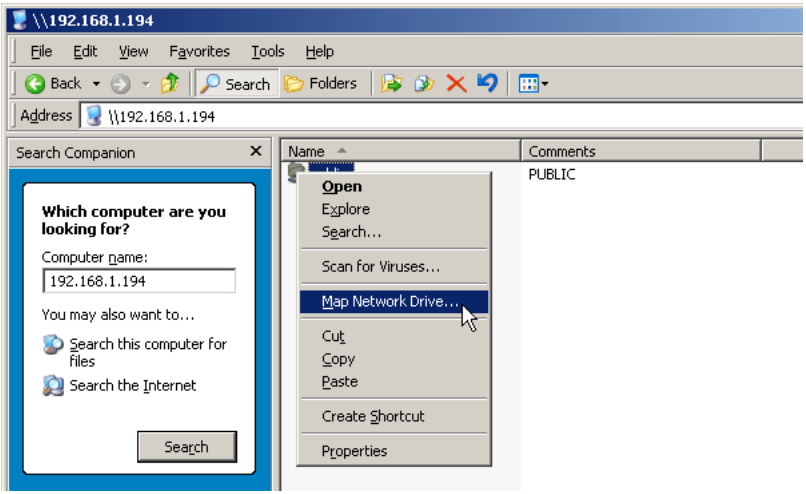


The SmartStor appears in the search results list.

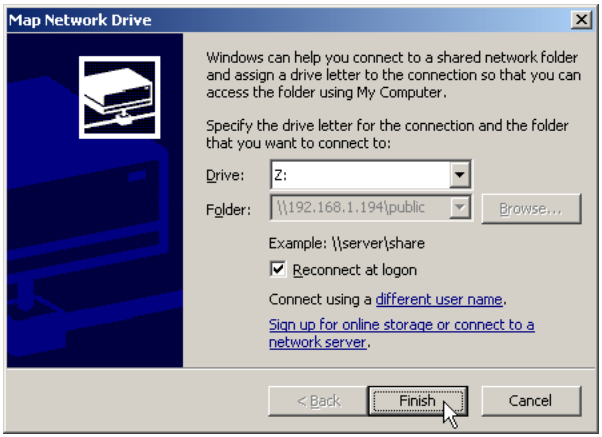


4. Double-click the **SmartStor** to show the Public folder and any other folders you have created.

5. Right-click the folder you want and choose *Map Network Drive* from the dropdown menu.

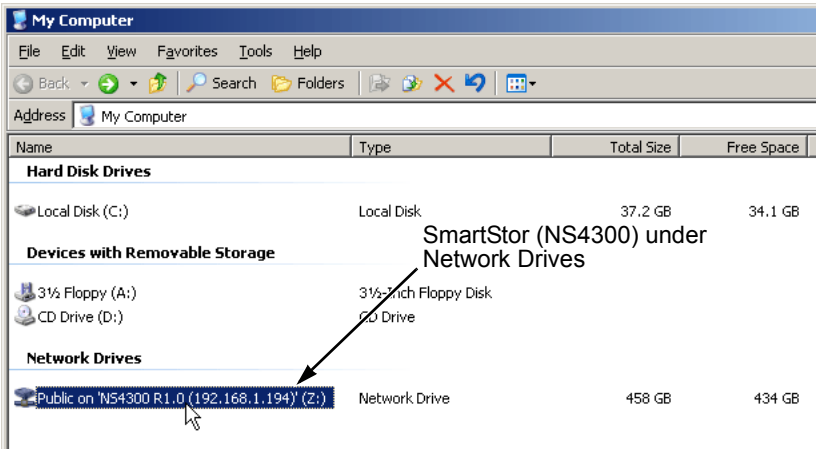


The Map Network Drive dialog box appears.


Map Network Drive
Windows can help you connect to a shared network folder and assign a drive letter to the connection so that you can access the folder using My Computer.
Specify the drive letter for the connection and the folder that you want to connect to:
Drive: Z:
Folder: \\192.168.1.194\public
Browse...
Example: \\server\share
Reconnect at logon
Connect using a different user name.
Sign up for online storage or connect to a network server.
< Back
Finish
Cancel

6. In the Map Network Drive dialog box, choose a drive letter and click the **Finish** button.
7. Double-click the **My Computer** icon on your Windows desktop.

The folder on the SmartStor appears under My Computer as a network drive.


My Computer
File Edit View Favorites Tools Help
Back Search Folders
Address My Computer
Name Type Total Size Free Space
Hard Disk Drives
Local Disk (C:) Local Disk 37.2 GB 34.1 GB
Devices with Removable Storage
3½ Floppy (A:)
CD Drive (D:)
Network Drives
Public on 'NS4300 R1.0 (192.168.1.194)' (Z:) Network Drive 458 GB 434 GB
SmartStor (NS4300) under Network Drives

You can now copy files to and from the folder on the SmartStor.

Setting up a Network Drive on a UNIX or Linux PC

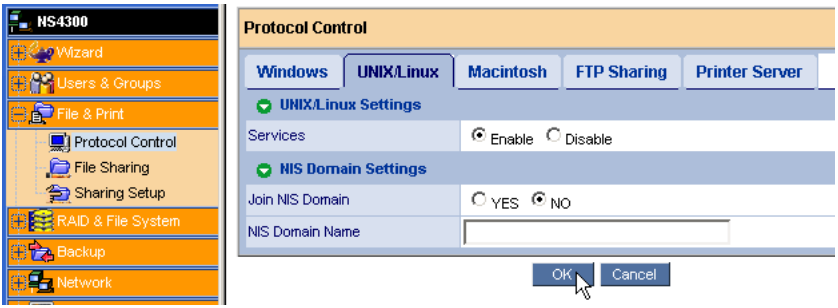
Before you can access the SmartStor from a UNIX or Linux PC, you must configure the SmartStor to communicate with UNIX and Linux.

On the Windows PC

1. Start PASM.

   See “PASM in your Browser” on page 18 or “PASM in SmartSYNC” on page 19.

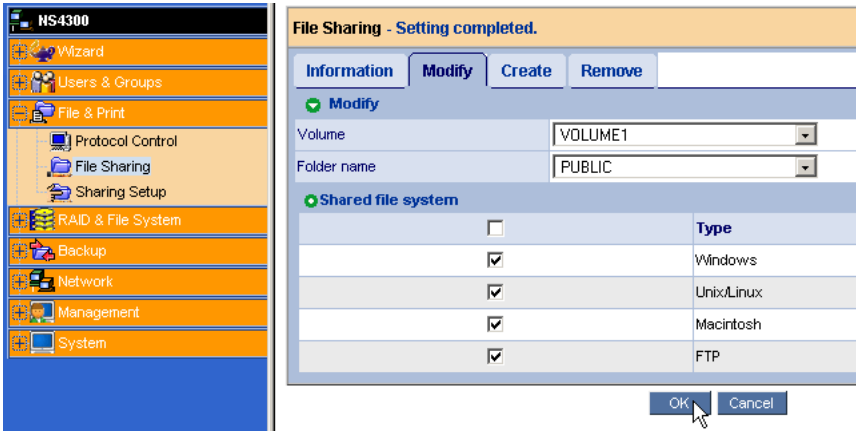
2. In the Tree, click the **+** beside the **File & Print** icon to expand the Tree.
3. Click the **Protocol Control** icon, then click the **UNIX/Linux** tab.



4. Next to Service, click the **Enable** option, then click the **OK** button.

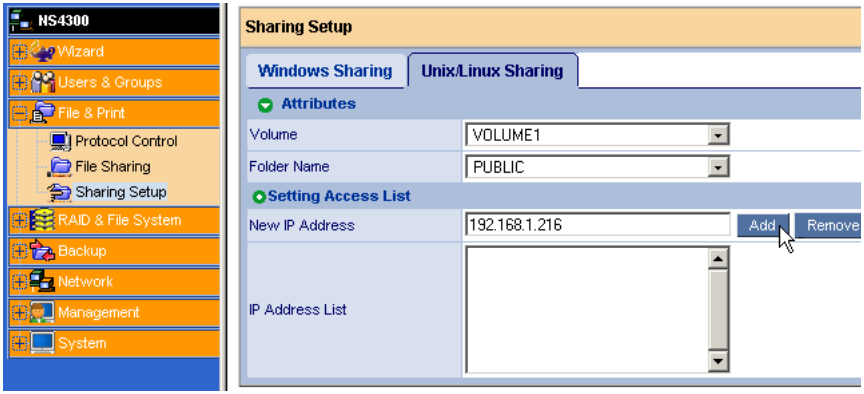
The UNIX/Linux protocol enables UNIX and Linux PCs to connect to SmartStor.

5. Click the **File Sharing** icon in the tree.
6. Click the **Modify** tab.



7. Check the **Unix/Linux** box, then click the **OK** button.

   The UNIX/Linux file sharing enables UNIX and Linux PCs to access folders on the SmartStor. In this case, access is given for the PUBLIC folder.
8. Click the **Sharing Setup** icon in the tree.
9. Click the **UNIX/Linux Sharing** tab.



10. In the New IP Address field, type the IP address of the UNIX/Linux PC from which you want to access the SmartStor.
11. Click the **Add** button.

On the UNIX/Linux PC with Command Line Interface

1. Open a terminal window.
2. Create a new folder for the SmartStor. Type **mkdir SmartStor** and press Enter.
3. Mount the SmartStor. Type **mount 192.168.1.194:/VOLUME1/PUBLIC/ SmartStor** and press Enter.

   Note that the IP address shown above is only an example. The IP address you type in your terminal window will be different.

   “Finding the SmartStor’s IP Address” on page 17.

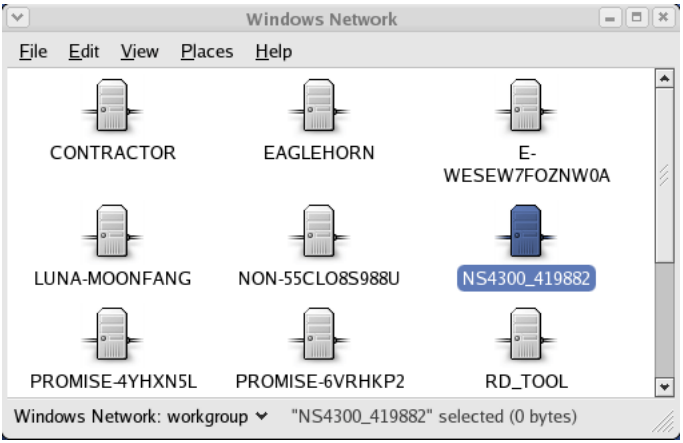
   Volume1 and Public refer to the default Volume and folder created during setup.See page 13. If you created another volume or folder, use their names.
4. Change to the SmartStor directory. Type **cd /SmartStor** and press Enter.

   You can now copy files to and from the folder on the SmartStor.
5. When you are done with the SmartStor, type **cd; umount /SmartStor** and press Enter.

On the Linux PC with Graphic Desktop

This procedure is for a RedHat Enterprise Linux 4 configuration. If you run a different version of Linux, you might have to adapt the procedure. See your OS documentation.

1. From the Applications menu, choose *Network Servers*.
2. In the Network window, double-click Windows Network.
3. Double-click the **SmartStor (NS4300)** on the network.



4. Double-click the folder you want.

If this is the first time you accessed this folder, an Authentication dialog box opens.

5. Type the user name and password in the respective fields, then click the **OK** button.

   The default user name is **admin**. The default password is **admin**.

   The user name and password are case sensitive.

   Leave the Domain field blank.

   The folder opens. You can now copy files to and from the folder on the SmartStor.

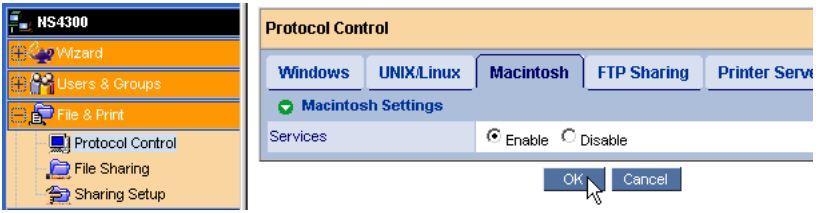
Setting up a Network Drive on a Macintosh PC

Before you can access the SmartStor from a Macintosh (MacOS X) PC, you must configure the SmartStor to communicate with the MacOS.

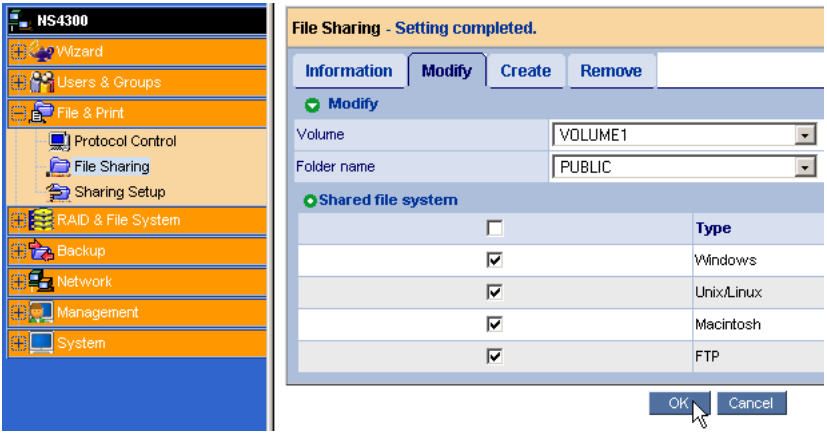
On the Windows PC

1. Start PASM.

   See “PASM in your Browser” on page 18 or “PASM in SmartSYNC” on page 19.
2. In the Tree, click the **+** beside the **File & Print** icon to expand the Tree.
3. Click the **Protocol Control** icon, then click the **Macintosh** tab.



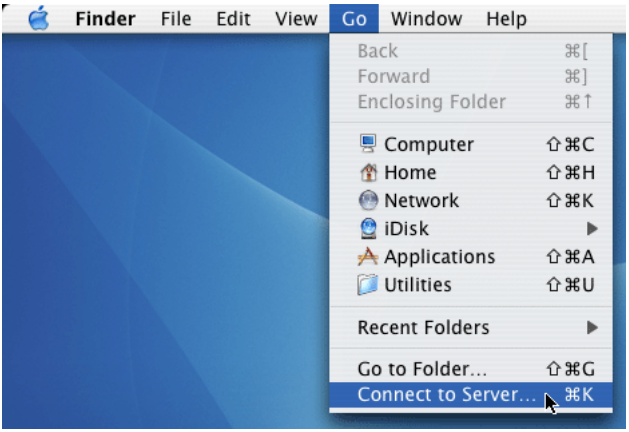
4. Next to Service, click the **Enable** option, then click the **OK** button.
   The Macintosh protocol enables Macintosh PCs to connect to SmartStor.
5. Click the **File Sharing** icon in the Tree.
6. Click the **Modify** tab.



7. Check the **Macintosh** box, then click the **OK** button.
   The Macintosh file sharing enables Macintosh PCs to access folders on the SmartStor. In this case, access is given for the PUBLIC folder.

On the Macintosh PC

1. From the Go menu, choose *Connect to Server*.

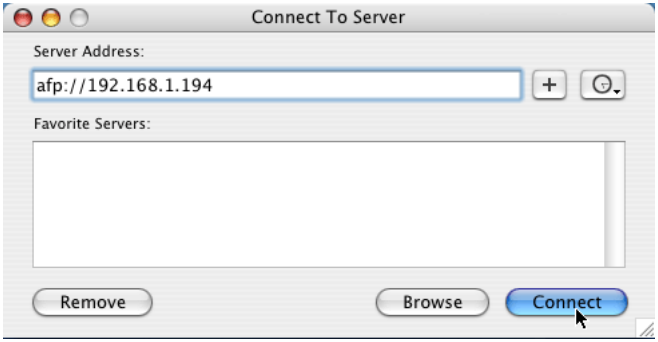


2. In the Connect to Server dialog box, type **afp://192.168.1.194** and click the **Connect** button.

   Note that the IP address shown below is only an example. The IP address you type in the dialog box on your Macintosh will be different.

   See “Finding the SmartStor’s IP Address” on page 17.

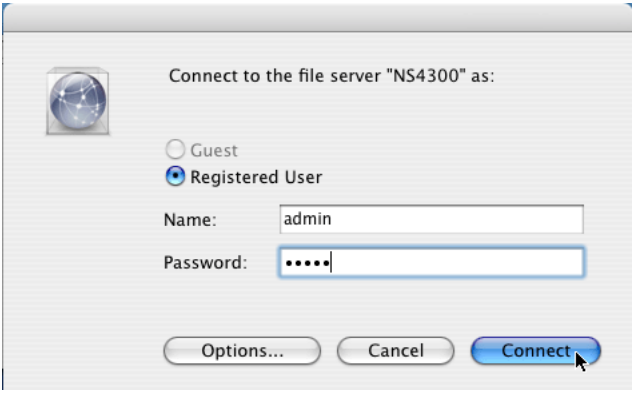
   Click the **+** button to add this IP address to the Favorite Servers list.



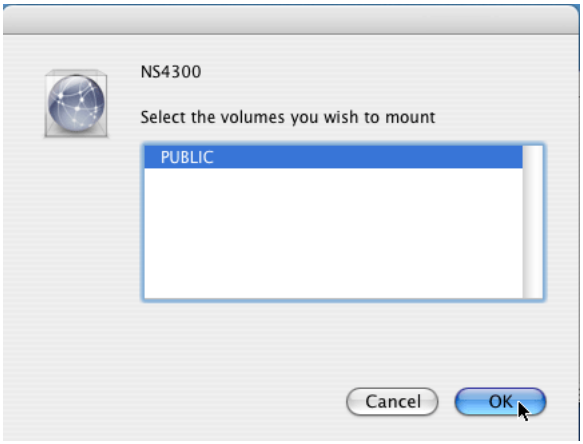
3. Type the user name and password in the respective fields, then click the **OK** button.

   The default user name is **admin**. The default password is **admin**.

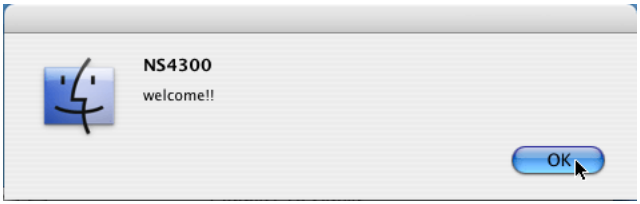
   The user name and password are case sensitive.



4. In the NS4300 dialog box, click the folder you want, then click the **OK** button.



5. In the NS4300 Welcome screen, click the **OK** button.



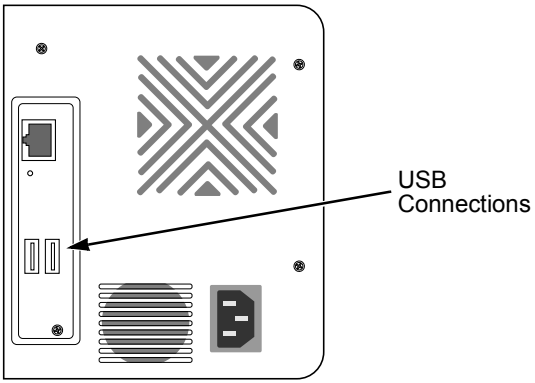
A window opens on the Macintosh desktop to access the folder on the SmartStor.

You can now copy files to and from the folder on the SmartStor.

Connecting a USB Printer to SmartStor

To connect a USB printer to the SmartStor:

1. Set up your printer according to the printer's *Setup Guide* or *User Manual*.
2. Install the printer drivers onto your PC as described in the printer's *Setup Guide* or *User Manual*.
3. Attach the USB cable from your printer to one of the USB connections on the back of the SmartStor.

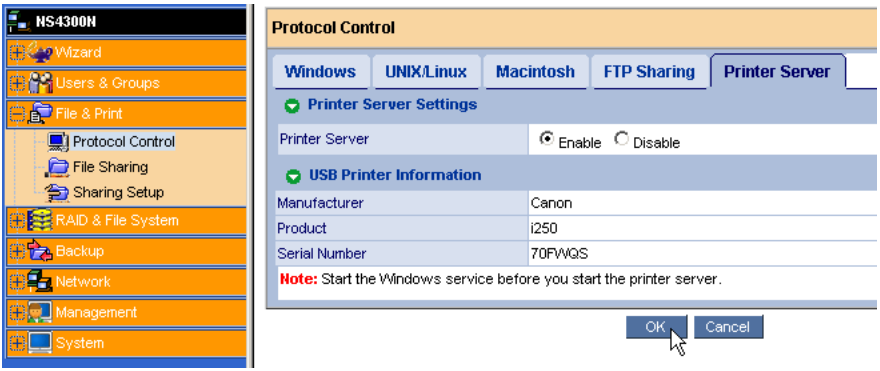


Setting up the Print Server on SmartStor

To set up the SmartStor's print server:

1. Start PASM.

   See "PASM in your Browser" on page 18 or "PASM in SmartSYNC" on page 19.
2. In the Tree, on the left side of the PASM screen, click the **+** beside the **File & Print** icon to expand the Tree.
3. Click the **Protocol Control** icon, then click the **Windows** tab.
4. Click the **Enable** option button beside Services.
5. Click the **OK** button to save your settings.
6. Click the **Printer Server** tab.
7. Click the **Enable** option button beside Printer Server.
8. Click the **OK** button to save your settings.



Setting up Windows Printing

To set up printing on a Windows PC:

1. On the Windows desktop, double-click the **My Network Places** icon.
2. Click the **Search** button in the toolbar.

   If the Search button is not shown, from the View menu, choose *Toolbars*, then *Standard Buttons*.
3. In the Computer name field, type the IP address of the SmartStor and click the **Search** button in the side bar.

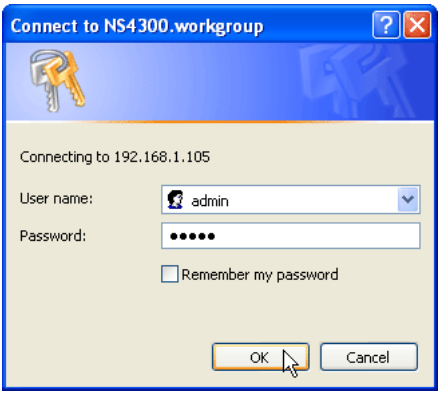
   See "Finding the SmartStor's IP Address" on page 17.

   The SmartStor appears in the search results list.
4. In the computer list, double-click the **SmartStor** to open it.

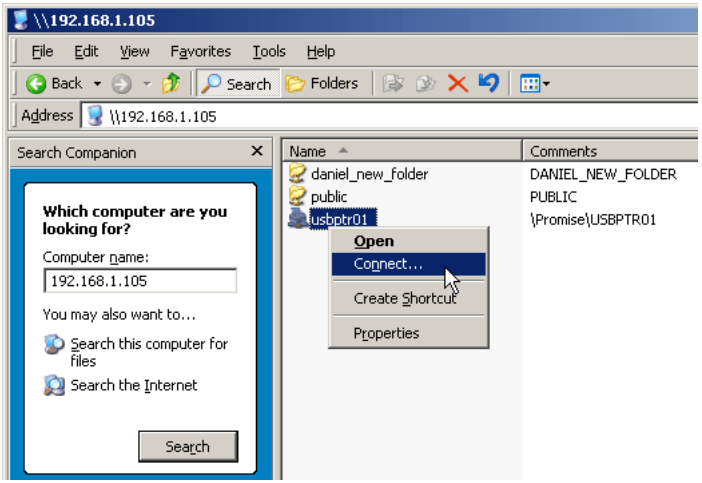
If the Connect to dialog box appears, type the user name and password in the respective fields, then click the **OK** button.

The default user name is **admin**. The default password is **admin**.

The user name and password are case sensitive.

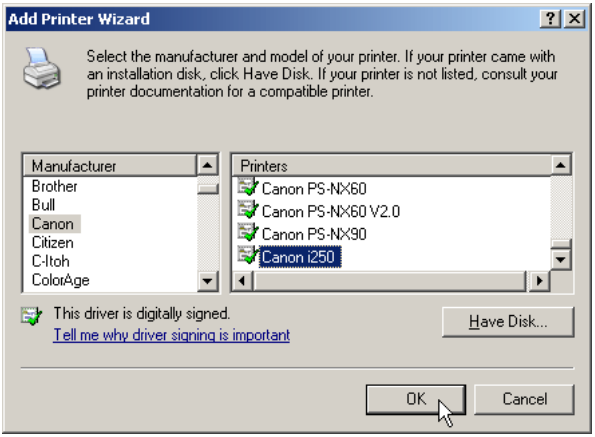


5. Right-click the **usbptr1** icon folder and choose *Connect...* from the dropdown menu.



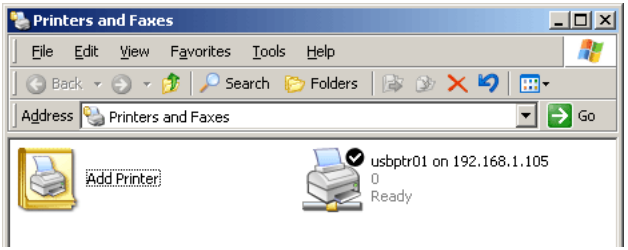
6. When the warning message about printer drivers appears, click the **OK** button to continue.

7. In the Add Printer Wizard, click the Manufacturer and model name of your USB printer, then click the **OK** button.



8. In the Add Printer Wizard, click the **OK** button.
9. To verify printer installation, in the Windows Start menu, choose *Settings*, then *Printers and Faxes*.

   The Printers and Faxes screen appears. The **usbptr1** is the USB printer on the SmartStor.



Setting up Linux Printing

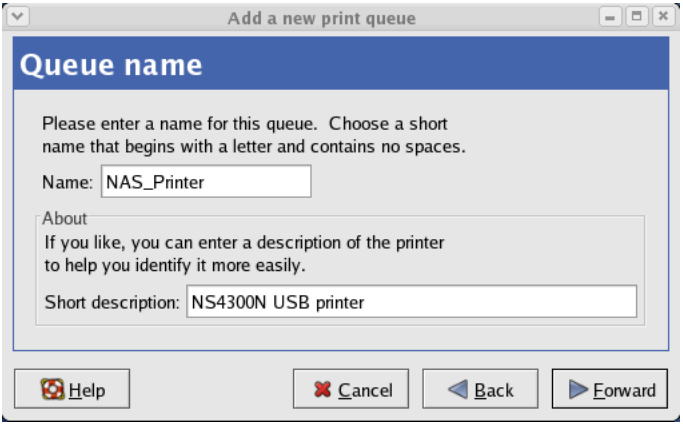
This procedure is for a RedHat Enterprise Linux 4 configuration. If you run a different version of Linux, you might have to adapt the procedure. See your OS documentation.

1. From the Applications menu, choose *System Settings*, then *Printing*.

   Printer configuration window opens.
2. Click the **New** button.

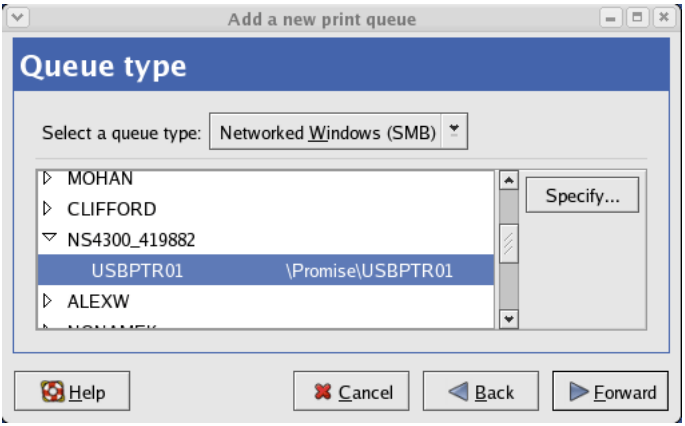
   Add a new print queue dialog box opens.

3. Click the **Forward** button.
4. In the Name field, type a name for the printer, such as *NAS_printer*, a description, and click the **Forward** button.


Add a new print queue
Queue name
Please enter a name for this queue. Choose a short name that begins with a letter and contains no spaces.
Name: NAS_Printer
About
If you like, you can enter a description of the printer to help you identify it more easily.
Short description: NS4300N USB printer
Help
Cancel
Back
Forward

5. From the Select a queue type dropdown menu, choose *Network Windows (SMB)*.
6. Scroll the list and click the **triangle** icon beside NS4300.

   USBPTR01 appears below NS4300. USBPTR01 represents the USB printer connected to the SmartStor.

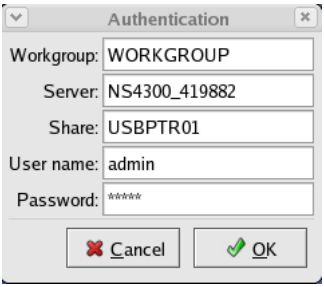


7. Highlight *USBPTR01* and click the **Forward** button.

   The Authentication dialog box opens.

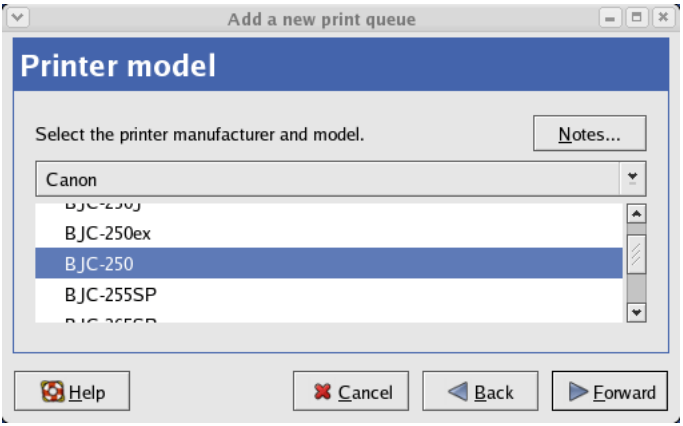
   In the User name and Password fields, type **admin**, then click the **OK** button.

The user name and password are case sensitive.



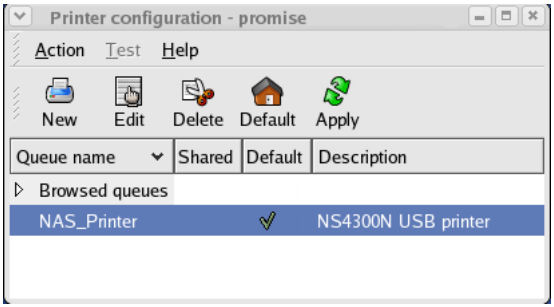
The Printer Model dialog box opens.

8. From the dropdown menu, choose the manufacturer of your printer.
   From the model list, highlight the model of your computer.
   Then click the **Forward** button.



9. Click the **Finish** button.

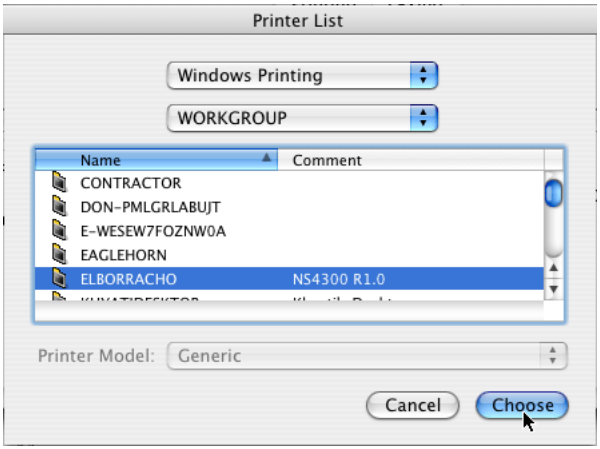
USBPTR01 is added to your printer list.



Setting up Macintosh Printing

To set up printing on a Macintosh PC:

1. From the Apple Menu, choose *System Preferences*.
2. Double-click the **Print & Fax** icon.
3. Click the **Setup Printers** button.
4. In the Printer List, click the **Add** icon.
   The Printer List displays a new panel.
5. In the new panel, from the popup menus, choose:
   - Windows Printing
   - Workgroup
6. From the list, highlight the **SmartStor**, then click the **Choose** button.

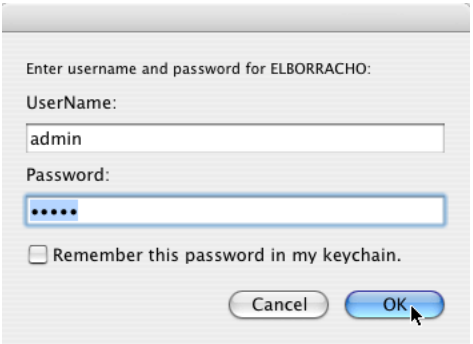


A user name and password dialog box appears.

7. Type the user name and password in the respective fields, then click the **OK** button.

   The default user name is **admin**. The default password is **admin**.

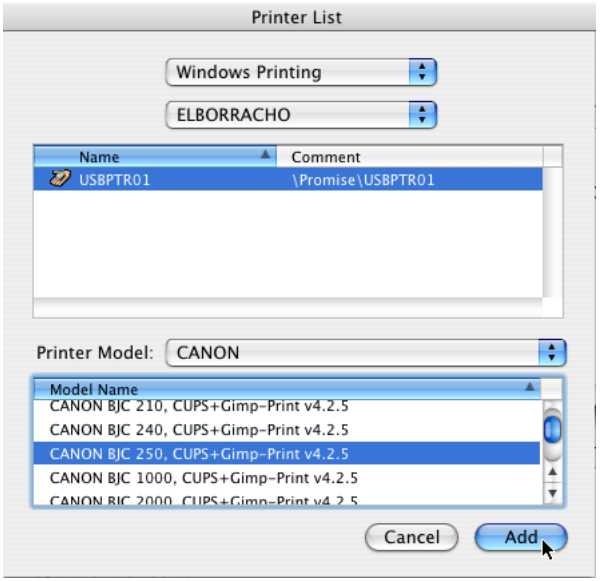
   The user name and password are case sensitive.



   The printer list displays a new panel.

8. Highlight the *USBPTR01* in the list.

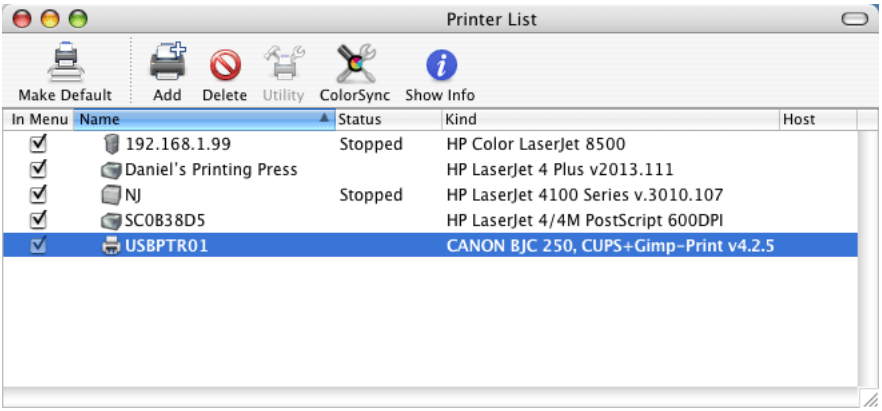
   USBPRT01 represents the USB printer connected to the SmartStor.



9. In the Printer Model popup menu, choose the make of your printer.
10. In the Model Name list, choose the model of your printer.

11. Click the **Add** button.

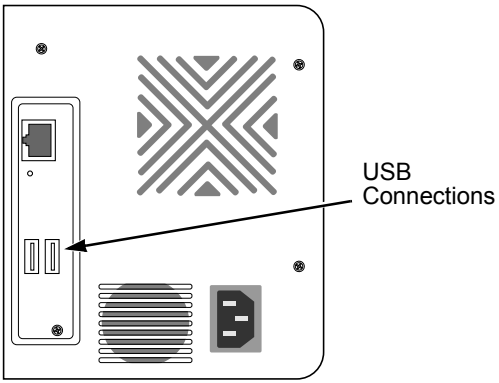
    USBPTR01 is added to your printer list.



Connecting a USB Drive

To connect a USB drive to the SmartStor, attach the USB cable from your external drive to one of the USB connections on the back of the SmartStor.

If you have a USB memory stick, attach it directly to one of the USB connections or use a USB cable, whichever is more convenient.



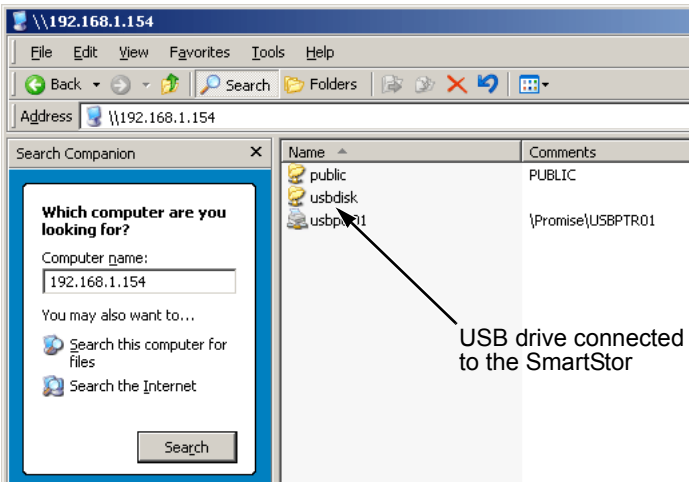
The USB drive or memory stick appears as a folder called *usbdisk* when you create your network drive. See the instructions on the following page.

SmartStor supports USB drives and memory sticks formatted to FAT32 and Ext3 file formats. If the SmartStor does recognize the USB drive or memory stick, the

usbdisk folder does not appear. See “Formatting an External USB Drive or Memory Stick” on page 83.

Windows PC

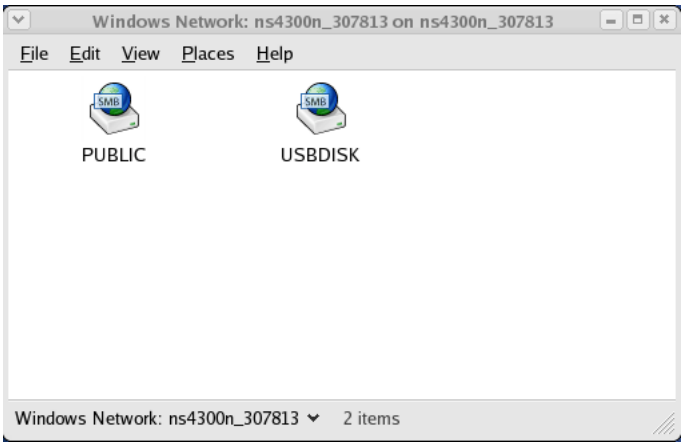
The USB drive appears as a folder on the SmartStor when you create a network drive on a Windows PC.



Follow the procedure “Setting up a Network Drive on a Windows PC” on page 21, but choose the *usbdisk* folder instead of the *public* folder.

Linux PC

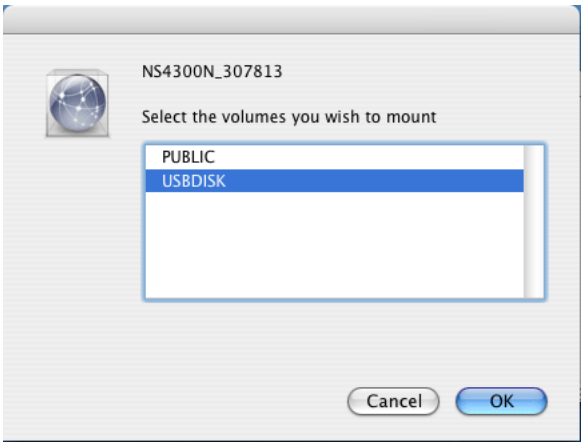
The USB drive appears as a folder on the SmartStor when you create a network drive on a Linux PC.



Follow the procedure “Setting up a Network Drive on a UNIX or Linux PC” on page 24, but choose the USBDISK folder instead of the PUBLIC folder.

Macintosh PC

The USB drive appears as a folder on the SmartStor when you create a network drive on a Macintosh PC.



Follow the procedure “Setting up a Network Drive on a Macintosh PC” on page 27, but choose the USBDISK folder instead of the PUBLIC folder.

Disconnecting a USB Drive

To disconnect a USB drive or memory stick from the SmartStor:

1. Be sure that no files on the USB drive or memory stick are still open.
2. Unplug the USB drive or memory stick from the SmartStor.
   The SmartStor automatically unmounts the USB drive or memory stick.

Chapter 4: One Touch Backup

- Enabling One Touch Backup (page 43)
- Creating a Backup Schedule (page 44)
- Performing a One Touch Backup (page 45)
- Viewing Your Backup Files (page 46)
- Restoring Your Backup Files (page 47)

One Touch Backup enables you to make a quick, automated backup of a selected folder on your PC, at the touch of a button. You can backup the files in a single folder, multiple folders, or your complete hard disk drive. This feature works on the Windows PC where you installed the SmartStor software.

Caution

The SmartStor and One Touch Backup cannot restore a failed boot drive in your PC. However, you can use the SmartStor to save your system backup file. See your Windows documentation for information about system backups.

For One Touch Backup to work, you must:

- Enable One Touch Backup on the SmartStor
- Create a Backup Schedule in SmartSYNC

Notes

- Windows does not allow SmartSYNC to access protected folders and files. If you want to perform a backup, you must first disable protection on your folders and files.
- If you want to run the Windows Backup or Restore Wizard, access the SmartStor as a network drive. See “Setting up a Network Drive on a Windows PC” on page 21.

Enabling One Touch Backup

To enable One Touch Backup on the SmartStor:

1. On the Windows PC, start PASM.

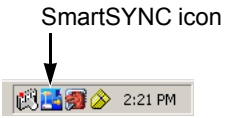
   See “PASM in your Browser” on page 18 or “PASM in SmartSYNC” on page 19.
2. In the Tree, click the **+** beside the Backup icon, then click the Client Backup icon.

3. On the **One Touch Backup** tab, click the **Enable** button for One Touch Backup Services, then click the **OK** button.

Creating a Backup Schedule

For each folder you want to backup, you must create a backup schedule.

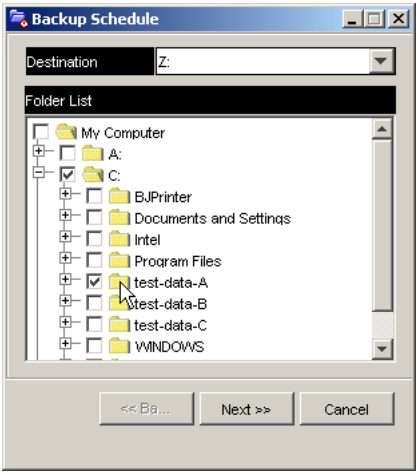
To create a Backup Schedule in SmartSYNC:



1. On the Windows desktop, double-click the SmartSYNC icon (right).
2. In SmartSYNC, click the **Schedule** tab.
3. Click the **Create** button.
4. In the Backup Schedule window, verify the Destination.

   The destination is a letter, typically Z, Y, or X, which represents a network drive on your PC and a specific folder on the SmartStor.
5. In the folder list, click the **+** icons to expand the tree.

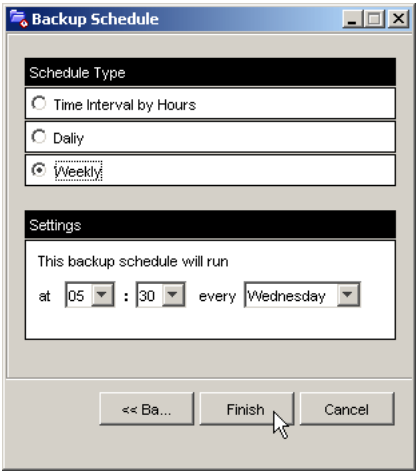
   The Folder List is a representation of the file structure on your PC.



6. Click the folder you want to backup.

   A checkmark appears beside the selected folder. The backup will include the folder you select and all subfolders.
7. Click the **Next >>** button.
8. Choose a Schedule interval by number of hours, daily, or weekly.
9. Choose a setting:
   - If you chose hours, choose the number of hours from the dropdown menu.

- If you chose daily, choose the time of day in the hour (24-hour clock) and minutes dropdown menu.
- If you chose weekly, choose the time of day and day of the week in the hour (24-hour clock), minutes, and day dropdown menus.

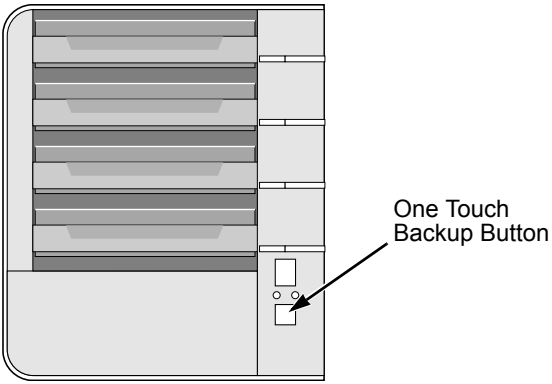


10. Click the **Finish** button.

    Your Backup Schedule appears in the **Schedule** tab.

Performing a One Touch Backup

To perform a One Touch Backup, press the **One Touch Backup** button on the front of the SmartStor.

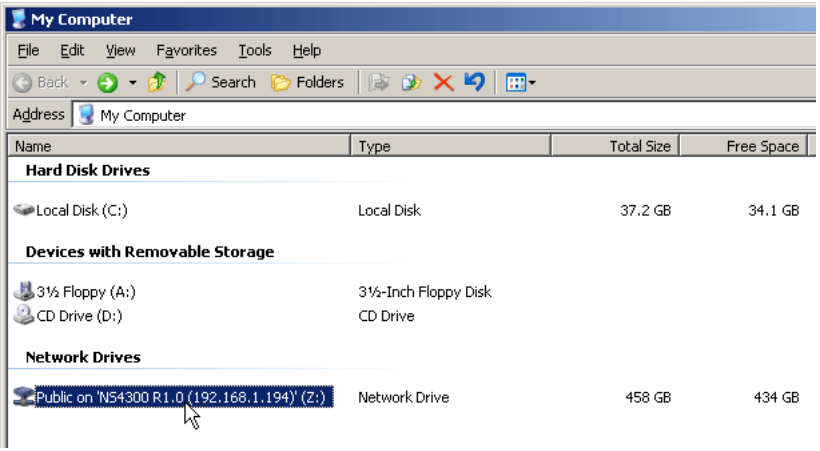


Within moments, the folders you specified are backed up onto the SmartStor. The One Touch Backup function backs up all of the folders on your PC for which you created a backup schedule.

Viewing Your Backup Files

To view your backup files on the SmartStor:

1. On the Windows PC desktop, double-click the My Computer icon.
2. Under Network Drives, double-click the SmartStor.


My Computer
File Edit View Favorites Tools Help
Back Search Folders
Address My Computer
Name Type Total Size Free Space
Hard Disk Drives
Local Disk (C:) Local Disk 37.2 GB 34.1 GB
Devices with Removable Storage
3½ Floppy (A:) 3½-Inch Floppy Disk
CD Drive (D:) CD Drive
Network Drives
Public on 'NS4300 R1.0 (192.168.1.194)' (Z:) Network Drive 458 GB 434 GB

3. On the SmartStor, find the BACKUP folder.

   The BACKUP folder contains the results of the One Touch Backup from your PC. The subfolders inside the BACKUP folder match the file structure on your PC's hard disk drive.

Note

The BACKUP folder takes its name from your account name. For example:

- If your account name is "admin," the folder name is BACKUP_admin.
- If your account name is "Billy," the folder name is BACKUP_Billy.

Restoring Your Backup Files

Caution

The Restore function will overwrite files in the destination folder on your PC.

If the backup files on the SmartStor match the names of the files in the restore location folder on your PC, the Restore function will overwrite those files on your PC.

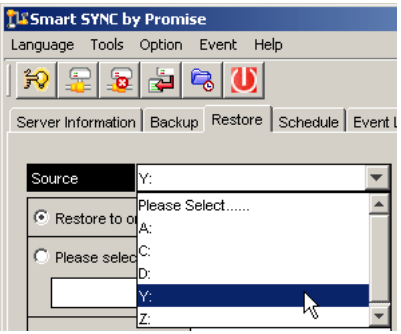
If you do not want to overwrite the files on your PC, take one of the following actions:

- Move the current files to a different folder on your PC.
- Choose a different restore location folder.

To restore backup files from the SmartStor to your PC:

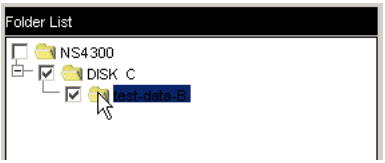
1. On the Windows PC, open SmartSYNC and click the **Restore** tab.
2. In the Source field, choose the folder that contains the backup files that you want to restore.

   In the Source field, folders are identified by their network drive names, such as Z, Y, or X.

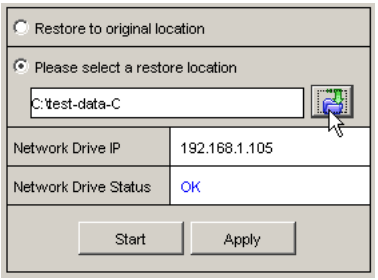


3. In the Folder List, click the folders that contain the backup files you want to restore.

In the Folder List, folders are identified by their file structure as it was copied from your PC. The lowest folder in the structure is the one that actually contains the files.



4. Choose a restore location:
   - **Original location** – The same folder on your PC from which the files were copied for the backup.
   - **Select a restore location** – A folder on your PC that you specify.



5. Click the **Start** button.

   The files are copied from the SmartStor to your PC.

   If you selected a restore location on your PC other than the original, the Restore function includes subfolders that match the files structure on your PC's hard disk drive.

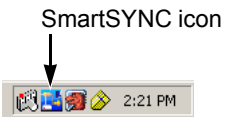
Chapter 5: SmartSYNC

- Opening the SmartSYNC Window (page 49)
- Choosing a Language (page 49)
- Closing the SmartSYNC Window (page 50)
- Quitting SmartSYNC (page 50)
- Displaying the SmartStors on your Network (page 50)
- Starting PASM (page 50)
- Connecting a Network Drive (page 52)
- Deleting Device (Network Drive) Records (page 53)
- Performing a Backup (page 53)
- Performing a Restore (page 55)
- Scheduling a Backup (page 56)
- Setting the Default Browser for PASM (page 58)
- Viewing the Event Log (page 58)

After installation, the SmartSYNC utility starts automatically in the background on your Windows PC. SmartSYNC does not run on UNIX, Linux, or Macintosh PCs.

Opening the SmartSYNC Window

To open the SmartSYNC window, in the Windows application tray (lower right corner of the screen), double-click the SmartSYNC icon.



The SmartSYNC window opens.

If the SmartSYNC icon does not appear in the Windows application tray, from the Windows Start menu, choose *Programs*, then *Promise NAS Utility*, and then *SmartSYNC*.

Choosing a Language

To choose a language, click the Language menu and choose the language you prefer.

Closing the SmartSYNC Window

To close the SmartSYNC window, click the X (close) icon at the top right corner of the window.

The SmartSYNC window closes but the utility continues to run.

To open the SmartSYNC window again, double-click the SmartSYNC icon in the application tray.

Quitting SmartSYNC

To quit SmartSYNC, click the **Exit** button (right).

Exit button

The SmartSYNC utility quits.

To restart SmartSYNC, do one of the following actions:

- Log out of Windows, then log in again.
- From the Windows Start menu, choose *Programs*, then *Promise NAS Utility*, and then *SmartSYNC*.

Displaying the SmartStors on your Network

To display a list of servers (SmartStors on your network), open the SmartSYNC window.

The SmartSYNC window opens with the Server Information tab selected. A list of servers appears in the Server List on the Server Information tab.

Starting PASM

Promise Advanced Storage Manager (PASM) displays in the default browser. To start the default browser and display PASM:

1. Open the SmartSYNC window.
2. Click the **Open GUI** button (right).

Open GUI button

Your default browser starts and the PASM login screen displays.

3. Type the user name and password in the respective fields, then click the **Login** button.

   The default user name is **admin**. The default password is **admin**.

   The user name and password are case sensitive.

   For more information about PASM, see “Chapter 5: SmartSYNC” on page 49.

   Also see “Setting the Default Browser for PASM” on page 58.

Connecting a Network Drive

To access the folders you create on the SmartStor, you must make them network drives on your PC. See “Adding a Folder” on page 76.

To connect a folder on the SmartStor as a network drive:

1. Open the SmartSYNC window.
2. Highlight the SmartStor in the server list, then click the **Connect Network Drive** button (right).

   The Connect Network Drive dialog box appears.

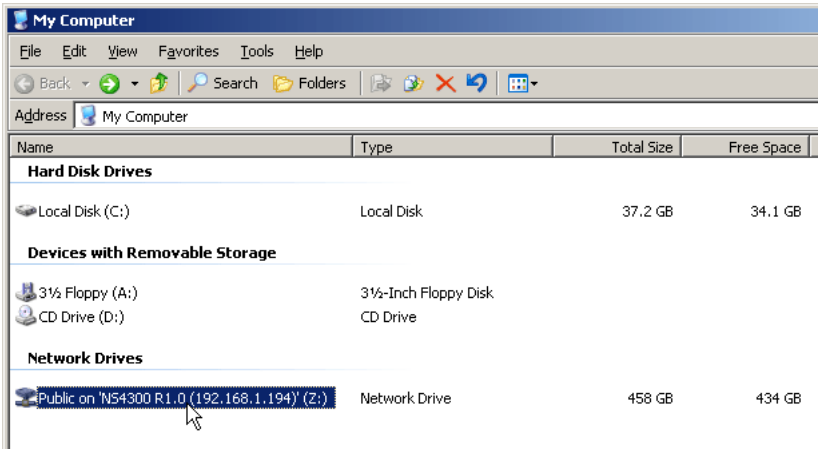
Connect Network Drive button

3. Choose the Device Name and Share Folder from the dropdown menus.

   The Device Name list begins with Z and goes in reverse alphabetical order.

   The Share Folder list represents the folders you have created on the SmartStor.
4. Click the **OK** button.
5. On the Windows desktop, double-click the My Computer icon.

   The Public folder on the SmartStor (NS4300) appears under My Computer as a network drive.


My Computer
File Edit View Favorites Tools Help
Back Search Folders
Address My Computer
Name Type Total Size Free Space
Hard Disk Drives
Local Disk (C:) Local Disk 37.2 GB 34.1 GB
Devices with Removable Storage
3½ Floppy (A:) 3½-Inch Floppy Disk
CD Drive (D:) CD Drive
Network Drives
Public on 'NS4300 R1.0 (192.168.1.194)' (Z:) Network Drive 458 GB 434 GB

Deleting Device (Network Drive) Records

To delete a drive record only affects SmartSYNC. Deleting a drive record does NOT delete your network drive under My Computer and it does NOT affect the data stored in your SmartStor's folders.

To delete a device record:

1. Open the SmartSYNC window.
2. Highlight a server in the Server List.
3. Click the **Remove Device Record** button (right).

   A Device List window appears.

Remove Device Record button

4. Click the Device Name that you want to delete, then click the **Remove** button.

   The Device name is removed from the list.
5. Click X or the **Cancel** button to close the window.

Performing a Backup

A Backup copies folders from your PC to the SmartStor. Also see "Chapter 4: One Touch Backup" on page 43.

Caution

The SmartStor and SmartSYNC cannot restore a failed boot drive in your PC. However, you can use the SmartStor to save your system backup file. See your Windows documentation for information about system backups.

Note

- Windows does not allow SmartSYNC to access protected folders and files. If you want to perform a backup, you must first disable protection on your folders and files.
- If you want to run the Windows Backup or Restore Wizard, access the SmartStor as a network drive. See "Setting up a Network Drive on a Windows PC" on page 21.

To perform a backup of a selected folder:

1. Open the SmartSYNC window.
2. Highlight a server in the Server List.
3. Click the **Backup** tab.
4. Choose a Destination.

Destinations are identified by drive letters and correspond to a specific folder on the SmartStor.

5. Click the folder you want to backup in the Folder List.

   Click the **+** icon to expand the file tree.

   A checkmark appears beside the selected folder. The backup will include the folder you choose and all subfolders.

6. Do one of the following actions:
   - To perform the backup now, click **Start** button.
   - To perform the backup later, click the **Apply** button to save your settings.

     When you are ready perform the backup, click the **Backup** button (right).

Backup button

Viewing Your Backup Folders

To view your backup folders on the SmartStor:

1. On the Windows desktop, double-click the My Computer icon.
2. Under Network Drives, double-click the SmartStor.
3. On the SmartStor, find the BACKUP folder.

   The BACKUP folder contains the results of the One Touch Backup from your PC. The subfolders inside the BACKUP folder match the file structure on your PC's hard disk drive.

Note

The BACKUP folder takes its name from your account name. For example:

- If your account name is "admin," the folder name is BACKUP_admin.
- If your account name is "Billy," the folder name is BACKUP_Billy.

Performing a Restore

Caution

The Restore function will overwrite files in the destination folder on your PC.

Note

If you want to run the Windows Backup or Restore Wizard, access the SmartStor as a network drive. See “Setting up a Network Drive on a Windows PC” on page 21.

A Restore copies folders from the SmartStor to your PC.

To perform a Restore of a chosen folder:

1. Open the SmartSYNC window.
2. Highlight a server in the Server List.
3. Click the **Restore** tab.
4. Choose a Source.

   Sources are identified by drive letters and correspond to a specific folder on the SmartStor.
5. Choose a restoration location.
   - **Restore to original location** – The files from the SmartStor will overwrite the files on our PC
   - **Select a restore location** – The files from the SmartStor are saved in a set of folders that match the original file structure from where they were copied
6. Optional. If you chose a new Restore location, click the **Browse** button (right), navigate to the destination you want, highlight the destination folder, then click the **Open** button to choose the folder.

Browse button

7. In the Folder List, click the folder you want to restore.

   Click the **+** icon to expand the file tree.

   A checkmark appears beside the chosen folder. The restore will include the folder you chose and all subfolders.
8. Do one of the following actions:
   - To perform the Restore now, click **Start** button.
   - To perform the Restore later, click the **Apply** button to save your settings.

When you are ready perform the backup, click the Tools menu and choose *Restore* > *Start*.

Scheduling a Backup

A Backup copies folders from your PC to the SmartStor.

Caution

The SmartStor and SmartSYNC cannot restore a failed boot drive in your PC. However, you can use the SmartStor to save your system backup file. See your Windows documentation for information about system backups.

Note

- Windows does not allow SmartSYNC to access protected folders and files. If you want to perform a backup, you must first disable protection on your folders and files.
- If you want to run the Windows Backup or Restore Wizard, access the SmartStor as a network drive. See “Setting up a Network Drive on a Windows PC” on page 21.

To schedule the backup of a selected folder:

1. Open the SmartSYNC window.
2. Click the **Schedule** tab.
3. Click the **Create** button.
4. In the Backup Schedule window, verify the Destination.

   Destinations are identified by drive letters and correspond to a specific folder on the SmartStor.
5. In the folder list, click the **+** icons to expand the tree.

   The Folder List is a representation of the file structure on your PC.
6. Click the folder you want to backup.

   A checkmark appears beside the selected folder. The backup will include the folder you select and all subfolders.
7. Click the **Next >>** button.
8. Choose a Schedule interval by number of hours, daily, or weekly.

9. Choose a setting:
   - If you chose hours, choose the number of hours from the dropdown menu.
   - If you chose daily, choose the time of day in the hour (24-hour clock) and minutes dropdown menu.
   - If you chose weekly, choose the time of day and day of the week in the hour (24-hour clock), minutes, and day dropdown menus.
10. Click the **Finish** button.

    Your Backup Schedule appears in the Schedule tab.

Also see “Chapter 4: One Touch Backup” on page 43.

Modifying a Backup Schedule

You can change source folders, time, and day settings for a scheduled Backup.

To modify a Backup Schedule:

1. Open the SmartSYNC window.
2. Click the **Schedule** tab.
3. In the Schedule list, highlight the schedule you want to modify.
4. Click the **Modify** button.
5. Choose the folders you want to backup from the tree, then click **Next >>**.
6. Choose the Schedule Type (hour, daily, weekly).
7. Choose the time and day settings.
8. Click **Finish** to save your Backup settings.

Deleting a Backup Schedule

To delete a Backup Schedule:

1. Open the SmartSYNC window.
2. Click the **Schedule** tab.
3. In the Schedule list, highlight the schedule you want to delete.
4. Click the **Delete** button.
5. In the confirmation box, click **Yes**.

Setting the Default Browser for PASM

To set the default browser for PASM:

1. Open the SmartSYNC window.
2. Click the Option menu and choose *Browser Path...*
   The Setup Browser Path dialog box displays.
3. Click the **...** button, then navigate to the browser's *.exe* file.
4. Highlight the browser's *.exe* file, then click the **Open** button.
5. Click the **OK** button to save your setting.

Viewing the Event Log

To view the Event Log:

1. Open the SmartSYNC window.
2. Click the **Event Log** tab.
3. From the Type menu, choose the type of events you want to display:
   - **All** – All events
   - **Info** – Information events only
   - **Error** – Error events only

Clearing the Event Log

To clear the Event Log:

1. Open the SmartSYNC window.
2. Click the **Event Log** tab.
3. Click the **Clear All** button.

Or, click the Event menu and choose *Clear All*.

Saving the Event Log to a Text File

To save the Event Log to a text file:

1. Open the SmartSYNC window.
2. Click the **Event Log** tab.
3. Click the **Save File** button (right).
4. In the Save dialog box, name the file, navigate to the folder where you want to save the log file, and click the **Save** button.
   A text file of the event log is saved to the your PC's hard drive.

Save File button

Chapter 6: PASM

- Connecting to PASM (below)
- Choosing a Language (page 62)
- Navigating in PASM (page 62)
- Setting up SmartStor with the Setup Wizard (page 63)
- Managing Users and Groups (page 65)
- Managing File & Print Services (page 70)
- Managing RAID Volumes (page 79)
- Managing Backups (page 84)
- Managing the Network Connection (page 88)
- Making Management Settings (page 91)
- Managing Services (page 96)

Connecting to PASM

The Promise Advanced Storage Manager (PASM) software is factory-installed on the SmartStor system. PASM runs in the browser on your PC. You can access PASM:

- Directly in your browser. See page 60.
- Through SmartSYNC. See page 61.

PASM in your Browser

To log into PASM in your browser:

1. Start your Browser.
2. In the Browser address field, type in the IP address of the SmartStor.

   See “Finding the SmartStor’s IP Address” on page 17.

   Note that the IP address shown below is only an example. The IP address you type into your browser will be different.

   - PASM uses an HTTP connection . . . . . .http://
   - Enter the SmartStor’s IP address 192.168.1.194

   Together, your entry looks like this: **http://192.168.1.194**

   The PASM login screen displays.

3. Type the user name and password in the respective fields, then click the **Login** button.

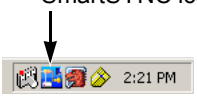
   The default user name is **admin**. The default password is **admin**.

   The user name and password are case sensitive.

PASM in SmartSYNC

To log into PASM through SmartSYNC:

SmartSYNC icon



1. In the Windows application tray (lower right corner of the screen), double-click the **SmartSYNC** icon (right).

   SmartSYNC opens with the Server Information tab displayed.

Open GUI button

2. Click the **Open GUI** button (right).

   Your default browser starts and the PASM login screen displays.

3. Type the user name and password in the respective fields, then click the **Login** button.

   The default user name is **admin**. The default password is **admin**.

   The user name and password are case sensitive.

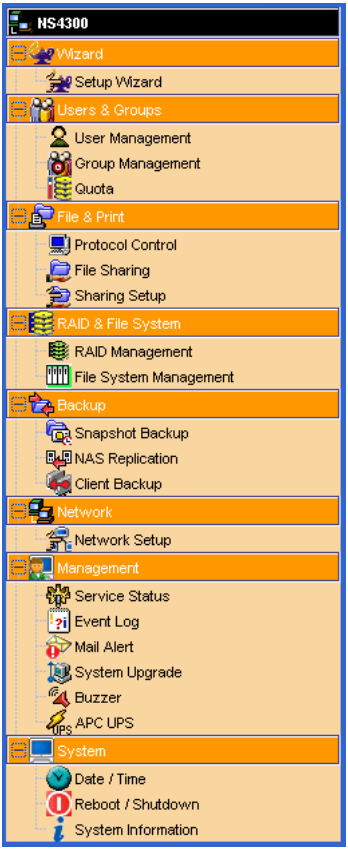
Choosing a Language

To choose a language, click the Language menu in the PASM Header and choose the language you prefer.

Navigating in PASM

The Tree is the primary navigation tool in PASM. Categories of functions listed with a **+** sign before the icon.

Icons for specific functions are listed under the categories. Click the **+** sign to show the functions.



Click the function icons to display their information on the screen. Each function has one or more tabs in its screen.

Setting up SmartStor with the Setup Wizard

If you used the NAS Setup Wizard utility to set up your SmartStor, you do not need to run the Setup Wizard in PASM.

If you have not yet set up your SmartStor:

1. In the Tree, click the **+** beside the **Wizard** icon, then on the **Setup Wizard** icon to display the Setup Wizard screen.
2. Click the **Next** button to start the Setup Wizard.

   The Step 1 screen appears.
3. Optional. In the Computer Name field, enter a name for the SmartStor.

   Use only letters, numbers, and the underscore character for the name.
4. Under network configuration, choose one of the following options:
   - **Configure using DHCP** – Choose this option if your network has a DCHP server with addresses available
   - **Configure using Specify an IP address** – Choose this option if you want to set the IP address and other network setting manually
5. If you chose the *Configure using Specify an IP address* option, type the following information in the fields provided:
   - IP Address
   - Subnet Mask
   - Default Gateway IP Address
   - Primary DNS
   - Secondary DNS

   See your Network Administrator for help with these settings.
6. Click the **Next** button to continue.

   The Step 2 screen appears.
7. Optional. Type a new administrator password into the New Password field.

   Retype the new password into the Retype Password field.
8. Optional. To add a user, click the **Add new user** option button.
9. If you clicked the **Add new user** option button, type a user name and password into the fields provided, then click the **Add** button.
10. Click the **Next** button to continue.

    The Step 3 screen appears.

11. Check the Enable box to the right of the services you plan to use.
    - **Windows** – Enables file access from Windows PCs. Also required to use the SmartStor as a print server.
    - **Unix/Linux** – Enables file access from Unix and Linux PCs
    - **Macintosh** – Enables file access from Macintosh PCs
    - **FTP** – Enables file access from PCs using FTP
12. Optional. Type new names into the Workgroup Name and Computer Description fields.
13. Click the **Next** button to continue.

    The Step 4 screen appears.

    You must add at least one folder, which you will access from your PC as a networked drive.
14. To add a folder, click the **Add new folder** option button.
15. Type a folder name into the field provided, check the boxes of the services you expect to use with this folder, then click the **Add** button.

    Add more folders as required.
16. Click the **Next** button to continue.

    The Step 5 screen appears.

    If a RAID Volume already exists on the SmartStor, information about the RAID Volume is shown. To change the RAID, you must delete it first, then run the Setup Wizard again. See “Deleting a RAID Volume” on page 82.
17. From the RAID Level dropdown menu, choose the RAID level you want for your disk array.

    See for “Choosing a RAID Level” on page 106 more information.
18. Highlight disk drives in the Free Disks column and click the **>>** button to move them to the Disks in RAID column.
19. Click the **Next** button to continue.

    The Finish screen appears.
20. Click the **Finish** button to set up your SmartStor.

    The setup process takes several minutes, depending on the size of your disk drives.

Managing Users and Groups

This category includes the following topics:

- Viewing a List of Users (page 65)
- Creating a User (page 65)
- Changing the Administrator's Password (page 65)
- Changing a User's Password (page 66)
- Deleting a User (page 66)
- Viewing a List of Groups (page 66)
- Creating a Group (page 67)
- Adding Members to a Group (page 67)
- Removing Members from a Group (page 67)
- Deleting a Group (page 68)
- Viewing Quotas (page 68)
- Setting Quotas (page 68)

Viewing a List of Users

To view the list of Users:

1. In the Tree, click the **+** beside the **Users & Groups** icon.
2. Click the **User Management** icon.
   A list of users appears on the Information tab.

Creating a User

You can create up to 512 Users.

To create or add a new user:

1. In the Tree, click the **+** beside the **Users & Groups** icon.
2. Click the **User Management** icon.
3. Click the **Create User** tab.
4. Type a user name in the field provided.
5. Type a password into the fields provided.
6. Click the **OK** button.

Changing the Administrator's Password

To change the Administrator's password:

1. In the Tree, click the **+** beside the **Users & Groups** icon.
2. Click the **User Management** icon.

3. Click the **Change Password** tab.
4. Type a new password into the fields provided.
5. Click the **OK** button.

If you forget your new password, you reset the SmartStor to the default Administrator's password. See "Restoring the Default Password" on page 124.

Changing a User's Password

To change a user's password:

1. In the Tree, click the **+** beside the **Users & Groups** icon.
2. Click the **User Management** icon.
3. Click the **Change Password** tab.
4. From the User Name dropdown menu, choose the name of the user whose password you want to change.
5. Type a new password into the fields provided.
6. Click the **OK** button.

Deleting a User

You cannot delete the Administrator or the Guest. To delete any other user:

1. In the Tree, click the **+** beside the **Users & Groups** icon.
2. Click the **User Management** icon.
3. Click the **Delete User** tab.
4. Click the option button to the left of the user you want to delete.
5. Click the **OK** button.
6. In the confirmation box, click the **OK** button.

Viewing a List of Groups

Groups are composed of users. You can assign permissions to a group, the same as you would do with individual users.

To view a list of groups:

1. In the Tree, click the **+** beside the **Users & Groups** icon.
2. Click the **Group Management** icon.

   A list of groups appears on the Information tab.

Creating a Group

Groups are composed of users. You can assign permissions to a group, the same as you would do with individual users. You can create up to 256 groups.

To create a group:

1. In the Tree, click the **+** beside the **Users & Groups** icon.
2. Click the **Group Management** icon.
3. Click the **Create** tab.
4. Type a group name in the field provided.
5. Click the **OK** button.

Adding Members to a Group

You must create a group before you can assign members to it. See “Creating a Group” on page 67.

To add members to a group:

1. In the Tree, click the **+** beside the **Users & Groups** icon.
2. Click the **Group Management** icon.
3. Click the **Group Members** tab.
4. From the dropdown menu, choose a group to which you want to add members.
5. Highlight users in the Users column and click the **>>** button to move them to the Members column.
6. Click the **OK** button.

Removing Members from a Group

1. In the Tree, click the **+** beside the **Users & Groups** icon.
2. Click the **Group Management** icon.
3. Click the **Group Members** tab.
4. From the dropdown menu, choose a group from which you want to remove members
5. Highlight users in the Members column and click the **<<** button to move them to the Users column.
6. Click the **OK** button.

Deleting a Group

You must remove all members from the group before you can delete the group. See “Removing Members from a Group” on page 67.

To delete a group:

1. In the Tree, click the **+** beside the **Users & Groups** icon.
2. Click the **Group Management** icon.
3. Click the **Delete** tab.
4. Click the option button next to the group you want to delete.
5. Click the **OK** button.

Viewing Quotas

Quotas are portions of storage space that you assign to each user or group.

To view a quota:

1. In the Tree, click the **+** beside the **Users & Groups** icon.
2. Click the **Quota** icon.

   A list of users and groups, and the following data appear on the screen:

   - Currently assigned quotas
   - Free space
   - Used space

Setting Quotas

Quotas are portions of storage space that you assign to each user or group. Assigning quotas enables you to control how much storage space each user or group can access.

By default, each user and group is assigned an unlimited quota, meaning that any one user or group can access the entire storage space. In the Quota screen, the names of groups are preceded with a **@** symbol.

To set a quota:

1. In the Tree, click the **+** beside the **Users & Groups** icon.
2. Click the **Quota** icon.
3. Click the **Settings** tab.
4. Highlight the user or group whose quota you want to assign.
5. Click one of the following options:

   - Unlimited
   - Limited Quota

6. If you chose Limited Quota, type a number into the field provided.
   This number represents how many MB of data the user or group can access.
7. Click the **OK** button.

Note

If you set different size quotas for the user and the group, SmartStor will use the smaller quota.

Managing File & Print Services

This category includes the following topics:

- Setting up Windows Access (page 70)
- Setting up UNIX/Linux Access (page 71)
- Setting up for Macintosh Access (page 72)
- Setting up for FTP Access (page 73)
- Setting up your Print Server (page 74)
- Setting up your DLNA Server (page 74)
- Viewing a List of Folders (page 75)
- Modifying Folder Services (page 75)
- Adding a Folder (page 76)
- Deleting a Folder (page 76)
- Setting up Windows Sharing for a Folder (page 77)
- Setting up UNIX and Linux Sharing for a Folder (page 77)
- Setting up FTP Sharing for a Folder (page 78)

Setting up Windows Access

Follow this procedure to set up access from a Windows PC:

1. In the Tree, click the **+** beside the **File & Print** icon.
2. Click the **Protocol Control** icon.
3. Click the **Windows** tab.
4. Click the **Enable** option button beside Services.
5. Optional. Type a new Computer Description into the field provided.
6. Choose the option button to make the SmartStor a member of:
   - An Active Directory (AD) Domain
   - A Workgroup

   Note: If you join an AD Domain, you automatically disable your NIS Domain settings. See “Setting up UNIX/Linux Access” on page 71.
7. Optional. If you chose an AD Domain, enter the following in the fields provided:
   - Domain Name
   - Domain Controller
   - Administrator Name
   - Administrator Password

   See your Network Administrator for help with this information.

8. Optional. If you chose an Workgroup, enter the Workgroup name into the field provided:

   See your Network Administrator for help with this information.
9. Click the **OK** button to save your settings.
10. In the Tree, click the **+** beside the **Sharing Setup** icon.
11. Click the **Windows Sharing** tab.
12. Choose a folder from the Folder Name dropdown menu.
13. In the User/Group list, highlight the name of a user or group.

    Group names are preceded by the **@** character.
14. Under Permissions, choose a permission level for this user or group:
    - Deny Access
    - Read Only
    - Read and Write
15. Click the **OK** button to save your settings.

    You can now access the folder you chose from a Windows PC.

    See “Chapter 3: Connecting to the SmartStor” on page 21 for information about the settings that you must make on your PC.

Note

Windows support is only through SMB and CIFS protocols. SmartStor supports the Recycle Bin feature. When you delete a file, the file is moved to the Recycle Bin, a hidden folder in the share folder.

Setting up UNIX/Linux Access

Follow this procedure to set up access from a UNIX or Linux PC:

1. In the Tree, click the **+** beside the **File & Print** icon.
2. Click the **Protocol Control** icon.
3. Click the **UNIX/Linux** tab.
4. Click the **Enable** option button beside Services.
5. Optional. If you want to join a NIS Domain, click the **NIS Domain** option button.

   Note: If you join an NIS Domain, you automatically disable your AD Domain settings. See “Setting up Windows Access” on page 70.
6. Optional. If you chose to join a NIS Domain, enter the Domain name into the field provided.

   See your Network Administrator for help with this information.

7. Click the **OK** button to save your settings.
8. In the Tree, click the **+** beside the **File Sharing** icon.
9. Click the **Modify** tab.
10. From the Folder name dropdown menu, choose the folder you want to access.
11. Check the **UNIX/Linux** box.
12. Click the **OK** button to save your settings.
13. In the Tree, click the **+** beside the **Sharing Setup** icon.
14. Click the **UNIX/Linux Sharing** tab.
15. Choose a folder from the Folder Name dropdown menu.
16. In the New IP Address field, type the IP address of the UNIX or Linux PC from which you will access this folder, then click the **Add** button.

    You must designate the IP addresses for each folder individually. You can have up to 256 IP addresses for all of your folders.
17. Click the **OK** button to save your settings.

    You can now access the folder you chose from a UNIX or Linux PC.

    See “Chapter 3: Connecting to the SmartStor” on page 21 for information about the settings that you must make on your PC.

Setting up for Macintosh Access

Follow this procedure to set up access from a Macintosh PC:

1. In the Tree, click the **+** beside the **File & Print** icon.
2. Click the **Protocol Control** icon.
3. Click the **Macintosh** tab.
4. Click the **Enable** option button beside Services.
5. Click the **OK** button to save your settings.
6. In the Tree, click the **+** beside the **File Sharing** icon.
7. Click the **Modify** tab.
8. From the Folder name dropdown menu, choose the folder you want to access.
9. Check the **Macintosh** box.
10. Click the **OK** button to save your settings.

    You can now access the specified folder from a Macintosh PC.

    See “Chapter 3: Connecting to the SmartStor” on page 21 for information about the settings that you must make on your PC.

Setting up for FTP Access

Follow this procedure to set up FTP access for your folders:

1. In the Tree, click the **+** beside the **File & Print** icon.
2. Click the **Protocol Control** icon.
3. Click the **FTP Sharing** tab.
4. Click the **Enable** option button beside Services.
5. Type a Command Port number into the field provided.

   Port 21 is typically used for the Command Port.
6. Optional. If you want to specify a range of passive data port numbers, type those numbers into the fields provided.

   The port range is 1024 to 65535.

   Be sure the port numbers you enter are enabled on your firewall and server.

   In active mode, the FTP server uses port 20 for the data port.
7. Optional. If your FTP client uses double-byte characters but does not support Unicode, choose your FTP client's encoding from the Client Coding Type dropdown menu. Choose from:
   - Unicode
   - Shift-JIS
   - GB2312
   - BIG5
8. Click the **OK** button to save your settings.
9. In the Tree, click the **+** beside the **File Sharing** icon.
10. Click the **Modify** tab.
11. From the Folder name dropdown menu, choose the folder you want to access.
12. Check the **FTP** box.
13. Click the **OK** button to save your settings.

    You can now access the specified folder from your PC using FTP.

Setting up your Print Server

Follow this procedure to set up the SmartStor as a printer server:

1. In the Tree, click the **+** beside the **File & Print** icon.
2. Click the **Protocol Control** icon.
3. Click the **Windows** tab.
4. Click the **Enable** option button beside Services.
5. Click the **OK** button to save your settings.
6. Click the **Printer Server** tab.
7. Click the **Enable** option button beside Printer Server.
8. Click the **OK** button to save your settings.

Notes

- The Printer Server tab also verifies that your USB printer is connected and online. If you do not see your printer on the Printer Server tab, take the necessary action to connect and power the printer. See “Connecting a USB Printer to SmartStor” on page 31.
- The software driver for your printer must be installed on your PC before you can print from the PC. See the printer’s *Setup Guide* or *User Manual*.

Setting up your DLNA Server

The Digital Living Network Alliance (DLNA) service enables the Universal Plug-and-Play (UPnP) protocol, so your SmartStor can function as a Digital Media Server (DMS). When your DLNA service is enabled, you can connect your DLNA control unit or UPnP client on the network where the SmartStor is connected, and use the SmartStor to play image, audio, and AV media.

You must install the optional DLNA plug-in before you can make this setting and use the UPnP protocol. See “Installing Application Plug-ins” on page 147.

Follow this procedure to set up the SmartStor as a DLNA server:

1. In the Tree, click the **+** beside the **File & Print** icon.
2. Click the **Protocol Control** icon.
3. Click the **DLNA Server** tab.
4. Click the **Enable** option button beside Services.
5. Click the **OK** button to save your settings.

The media content directory is /VOLUME1/PLUGINAPP/DLNA/. This is a shared folder created when you install the DLNA plug-in. The directory has three sub-directories: PICTURE, MUSIC, and VIDEO.

With the DLNA plug-in, SmartStor supports these media formats:

- **Picture** – bmp, gif, jpg, jpeg, png, tif
- **Music** – mp3, pcm, wma
- **Video** – avi, mpg, mpeg, wmv, tts, vob

Viewing a List of Folders

A folder is the entity that appears as a Network Drive on your PC.

To view the list of folders:

1. In the Tree, click the **+** beside the **File & Print** icon.
2. Click the **File Sharing** icon.

   A list of current folders appears in the Information tab.

Modifying Folder Services

Services enable different types of PCs to access your folders. Use this function to add or remove a service for a specific folder.

To modify the services on a folder:

1. In the Tree, click the **+** beside the **File & Print** icon.
2. Click the **File Sharing** icon.
3. Click the **Modify** tab
4. From the Volume dropdown menu, choose the RAID Volume containing the folder you want to modify.
5. From the Folder Name dropdown menu, choose the folder you want to modify.
6. Check the boxes beside the services you want to use.
7. Click the **OK** button.

   If the service you want is OFF, see:

   “Setting up Windows Access” on page 70

   “Setting up UNIX/Linux Access” on page 71

   “Setting up for Macintosh Access” on page 72

   “Setting up for FTP Access” on page 73

Adding a Folder

A folder is the entity that appears as a Network Drive on your PC.

To add a folder:

1. In the Tree, click the **+** beside the **File & Print** icon.
2. Click the **File Sharing** icon.
3. Click the **Create** tab.
4. From the Volume dropdown menu, choose the RAID Volume in which you want to create a new folder.
5. In the Folder Name field, type a name for your new folder.
6. Check the boxes beside the services you want to use.
7. Click the **OK** button.

   To access the new folder from a Windows PC, see “Setting up Windows Sharing for a Folder” on page 77.

   To access the new folder from a UNIX or Linux PC, see “Setting up UNIX and Linux Sharing for a Folder” on page 77.

   To make the folder a network drive on your PC, see “Chapter 3: Connecting to the SmartStor” on page 21.

Deleting a Folder

Caution

When you delete a folder, you delete all the data saved in the folder. Back up any important data before you delete a folder.

To delete a folder:

1. In the Tree, click the **+** beside the **File & Print** icon.
2. Click the **File Sharing** icon.
3. Click the **Remove** tab
4. Click the option button beside the folder you want to delete.
5. Click the **OK** button.
6. In the confirmation box, click the **OK** button to confirm.

Setting up Windows Sharing for a Folder

Windows sharing assigns user access the folders on your SmartStor. By default all users and groups have read-only access.

To set up Windows sharing for a folder:

1. In the Tree, click the **+** beside the **File & Print** icon.
2. Click the **Sharing Setup** icon.
3. Click the **Windows Sharing** tab.
4. From the Volume dropdown menu, choose the RAID Volume containing the folder you want to modify.
5. From the Folder Name dropdown menu, choose the folder you want to modify.
6. In the Permission list, click the option button for one of the following permissions for each group and user:
   - Deny Access
   - Read Only
   - Read and Write
7. Click the **OK** button.

   Be sure the Windows service is running for this folder. See “Setting up Windows Access” on page 70.

Setting up UNIX and Linux Sharing for a Folder

UNIX and Linux sharing designates which UNIX and Linux PCs can access the folders on your SmartStor. You specify a UNIX or Linux PC by its IP address. You can add up to 256 IP addresses for all of your folders.

You must designate the IP addresses for each folder individually.

To set up UNIX and Linux sharing for a folder:

1. In the Tree, click the **+** beside the **File & Print** icon.
2. Click the **Sharing Setup** icon in the tree.
3. Click the **UNIX/Linux Sharing** tab.
4. From the Volume dropdown menu, choose the RAID Volume containing the folder you want to modify.
5. From the Folder Name dropdown menu, choose the folder you want to modify.
6. In the New IP Address field, type the IIP address of the UNIX or Linux PC from which you will access this folder.
7. Click the **Add** button.

Be sure the UNIX/Linux service is running for this folder. See “Setting up UNIX/Linux Access” on page 71.

Setting up FTP Sharing for a Folder

FTP sharing assigns user access the folders on your SmartStor. By default all users and groups have read-only access.

To set up FTP sharing for a folder:

1. In the Tree, click the **+** beside the **File & Print** icon.
2. Click the **Sharing Setup** icon.
3. Click the **FTP Sharing** tab.
4. From the Volume dropdown menu, choose the RAID Volume containing the folder you want to modify.
5. From the Folder Name dropdown menu, choose the folder you want to modify.
6. In the Permission list, click the option button for one of the following permissions for each group and user:
   - Deny Access
   - Read Only
   - Read and Write
7. Click the **OK** button.

   Be sure the FTP service is running for this folder. See “Setting up for FTP Access” on page 73.

Managing RAID Volumes

This category includes the following topics:

- Viewing RAID Volume Status (page 79)
- Viewing Disk Drive Information (page 80)
- Creating a RAID Volume (page 80)
- Designating a Spare Drive (page 81)
- Migrating a RAID Volume (page 81)
- Deleting a RAID Volume (page 82)
- Viewing an External USB Drive or Memory Stick (page 83)
- Formatting an External USB Drive or Memory Stick (page 83)

Viewing RAID Volume Status

RAID status refers to the disk drives on your SmartStor and how they are arranged into a RAID Volume.

To view the status of your RAID Volume:

1. In the Tree, click the **+** beside the **RAID & File System** icon.
2. Click the **RAID Management** icon.

   The RAID Status tab displays the current RAID system and its status:

   - **RAID Name** – The name of your RAID, automatically assigned when it was created
   - **RAID Level** – RAID 0, 1, 5, or 10, specified when it was created
   - **Capacity** – Data capacity of the RAID Volume in GB
   - **RAID Status** – Functional is normal. Critical means a disk drive has failed. Offline means you cannot access your data.

     Critical and offline RAIDs require you to take corrective action. See “Replacing a Failed Disk Drive” on page 113.
   - **Action Status** – Idle is normal. Rebuilding means the RAID Volume is being rebuilt after a disk drive failure. Migrating means the RAID Volume is adding a disk drive or changing RAID levels.
   - **Background Activity** – None is normal. Running means a background activity is in progress.

Viewing Disk Drive Information

To view information about a disk drive:

1. In the Tree, click the **+** beside the **RAID & File System** icon.
2. Click the **RAID Management** icon.

   The RAID Status tab displays the current RAID system and its status.
3. In the Disk List, double-click a disk drive icon.

   The disk drive information displays under Disk Status.

Creating a RAID Volume

On SmartStor, the term RAID Volume refers to one or more disk drives working together as a RAID logical drive.

You can also use a USB disk to create a RAID Volume. See “Viewing an External USB Drive or Memory Stick” on page 83.

You must have unassigned disk drives in your SmartStor to create a new RAID.

To create a new RAID Volume:

1. In the Tree, click the **+** beside the **RAID & File System** icon.
2. Click the **RAID Management** icon.
3. Click the **Create** tab.
4. From the RAID Level dropdown menu, choose the RAID level you prefer for your disk array.

   See “Choosing a RAID Level” on page 106 for more information.
5. Highlight disk drives in the Free Disks column and click the **>>** button to move them to the Disks in RAID column.
6. Click the **OK** button.

   The RAID Volume is created and formatting begins. Formatting requires several minutes, depending on the size of your disk drives.

   After formatting is done, you must create folders on your RAID Volume. See “Adding a Folder” on page 76.

Designating a Spare Drive

If you have an unassigned disk drive, you can assign it as a spare drive.

For more information, see “Spare Drive” on page 107 and “Automatic Rebuilding” on page 108.

To assign a spare drive:

1. In the Tree, click the **+** beside the **RAID & File System** icon.
2. Click the **RAID Management** icon.
3. Click the **Create** tab.
4. From the RAID Level dropdown menu, choose *Spare Disk*.
5. Highlight a disk drive in the Free Disks column and click the **>>** button to move it to the Disks in RAID column.
6. Click the **OK** button.

Migrating a RAID Volume

To migrate a RAID Volume means to change its RAID level or to add disk drives. See “RAID Volume Migration” on page 109 for more information.

To migrate a RAID Volume:

1. In the Tree, click the **+** beside the **RAID & File System** icon.
2. Click the **RAID Management** icon.
3. Click the **Modify** tab.
4. From the Current Volume dropdown menu, choose the RAID Volume which you want to modify.
5. In the Migrate to RAID Level dropdown menu, choose the target RAID Level.
6. To add disk drives, highlight disk drives in the Free Disks column and click the **>>** button to move them to the Disks in RAID column.
7. Click the **OK** button.

   The RAID Volume is modified as you directed. Migration requires several minutes, depending on the type of modification taking place and the size of your disk drives.

   During the modification, your RAID Volume and all of the folders on it are fully accessible.

   After the Migration is completed, you must extend the file system in order to use the storage space you have added. You can extend the file system immediately or wait until later.
8. Click the **File System Management** icon.
9. In the File System Status tab, click the **Extend File System** button.

Deleting a RAID Volume

Caution

When you delete a RAID Volume, you delete all the folders in the RAID volume and all the data saved in the folders. Back up any important data before you delete a RAID Volume.

Note

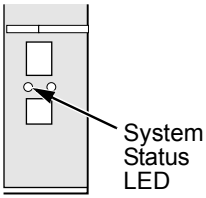
You cannot delete a RAID Volume while a background activity is running, such as Migration or Rebuild. Wait until these activities are completed.

To delete a RAID Volume:

1. In the Tree, click the **+** beside the **RAID & File System** icon.
2. Click the **RAID Management** icon.
3. Click the **Delete** tab.
4. Click the option button beside the RAID Volume you want to delete.
5. Click the **OK** button.
6. In the confirmation box, type **yes** into the field provided, then click the **OK** button.

   After a RAID Volume is deleted, the SmartStor reboots automatically. When the SmartStor is fully booted:

   - The System Status LED turns green (right)
   - The buzzer beeps one time (if the buzzer is enabled)



7. Close your browser then restart the browser to access PASM.

Viewing an External USB Drive or Memory Stick

To view a USB drive or memory stick attached to the SmartStor:

1. In the Tree, click the **+** beside the **RAID & File System** icon.
2. Click the **RAID Management** icon.

   The USB drive or memory stick appears as a USB External Disk
3. Click the **File System Management** icon.

   The USB drive or memory stick appears as a Volume called USBDISK.

You do NOT create a RAID Volume or folders with the USB drive or memory stick as you would with the disk drives installed in the SmartStor enclosure.

With the USB drive or memory stick connected to the SmartStor, create a network drive on your PC and choose the USB disk as the folder. Then you can access the USB drive or memory stick from your PC.

See “Chapter 3: Connecting to the SmartStor” on page 21 for more information.

Formatting an External USB Drive or Memory Stick

This option only appears when SmartStor does not recognize the file system on the USB drive or memory stick.

Caution

When you format a USB drive or memory stick, you delete all the data saved on it. Back up any important data before you format.

To format a USB drive or memory stick:

1. Attach the USB drive or memory stick to one of the USB ports on the back of the SmartStor.
2. In the Tree, click the **+** beside the **RAID & File System** icon.
3. Click the **File System Management** icon.
4. On the File System Status tab, highlight the USB drive.
5. From the Format File System Type dropdown menu, choose a file system:
   - **FAT 32** – Use for Windows, Linux, and Macintosh PCs, and SmartStor
   - **Ext3** – Use for UNIX and Linux PCs, and SmartStor
6. Click the **Format USB Disk** button.
7. In the confirmation box, type **yes**, then click the **OK** button.

Formatting requires several minutes, depending on the size of your USB drive or memory stick.

Managing Backups

This category includes the following topics:

- Viewing a List of Snapshot Backups (page 84)
- Setting up a Snapshot Backup (page 84)
- Scheduling a Snapshot Backup (page 85)
- Recovering Snapshot Backups (page 85)
- Viewing the NAS Replication Schedule (page 86)
- Setting up NAS Replication (page 86)
- Enabling One Touch Backup (page 87)

Viewing a List of Snapshot Backups

To view the list of Snapshot backups:

1. In the Tree, click the **+** beside the **Backup** icon.
2. Click the **Snapshot Backup** icon.

   The current list of Snapshots displays on the Information tab.

Setting up a Snapshot Backup

Caution

Setting up a Snapshot will delete all existing Snapshots.

To setup a Snapshot Backup:

1. In the Tree, click the **+** beside the **Backup** icon.
2. Click the **Snapshot Backup** icon.
3. Click the **Setup** tab.
4. From the Volume dropdown menu, choose the RAID Volume you want to backup.
5. Next to Snapshot Status, click the **Enable** option.
6. In the Reserve Capacity dropdown menu, choose a portion in GB of the RAID Volume you want to reserve for snapshots.
7. Click the **OK** button.
8. In the confirmation box, type **yes** into the filed provided than click the **OK** button.

   The snapshot backup settings are applied. The process takes a few moments. Click the **Schedule** tab for scheduling options.

Scheduling a Snapshot Backup

To schedule a Snapshot Backup:

1. In the Tree, click the **+** beside the **Backup** icon.
2. Click the **Snapshot Backup** icon.
3. Click the **Schedule** tab.
4. Click the option you want from the Schedule Type list.
   - **Disable** – No snapshots will be taken.
   - **Do it at once** – Snapshots will be taken now, one time only.
   - **Time interval by hour** – Snapshots will be taken at the hourly interval you choose from the dropdown menu.
   - **Daily** – Snapshots will be taken at the time of day you choose from the dropdown menus.
   - **Weekly** – Snapshots will be taken on the day of the week, at the time of day you choose from the dropdown menus.
5. As needed, make your choices from the dropdown menus.
6. Click the **OK** button.

   The new backup schedule is applied. If you have not yet made your Snapshot settings, click the **Setup** tab and make them now.

Recovering Snapshot Backups

The Snapshot recovery feature has two functions:

- Use a Snapshot to restore the data volume (VOLUME1 or VOLUMEx) to an earlier point in time.
- Export a Snapshot to the share folder. The recovered Snapshot volume is read-only.

To recover a Snapshot backup:

1. In the Tree, click the **+** beside the **Backup** icon.
2. Click the **Snapshot Backup** icon.
3. Click the **Recovery** tab.
4. Click the option button beside the Timestamp and Volume that you want to recover or export.
5. Do one of the following actions:
   - To restore the data volume using the Snapshot, click the **OK** button.
   - To export the Snapshot to the share folder, click the **Export** button.

   SmartStor performs the action you specified.

Viewing the NAS Replication Schedule

NAS Replication is a feature that uses one SmartStor to backup the data on another SmartStor. The two SmartStor systems must be on the same network.

To view the NAS Replication schedule:

1. In the Tree, click the **+** beside the **Backup** icon.
2. Click the **NAS Replication** icon.

   The current schedule displays on the Information tab.

   - **Role:**

     Standalone – No backup server was specified

     Primary Server – This SmartStor is the primary, the other SmartStor is the backup

     Backup Server – This SmartStor is the backup, the other SmartStor is the primary
   - **Primary or Backup Server** – The IP address of the other SmartStor on the network.
   - **Schedule** – Replication schedule in number of hours, daily or weekly. Appears on the primary server.

Setting up NAS Replication

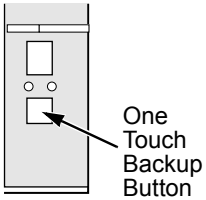
To set up NAS replication:

1. In the Tree, click the **+** beside the **Backup** icon.
2. Click the **NAS Replication** icon.
3. Click the **Setup** tab.
4. Under Settings, click the option button to assign a role to this SmartStor:
   - **Standalone** – Use this option when you only have one SmartStor on your network. This is the default setting and it disables NAS Replication.
   - **Primary** – This SmartStor is the primary and the other SmartStor is the backup server.
   - **Backup Server** – The other SmartStor is the primary and this SmartStor is the backup server.
5. Optional. If you chose Primary or Backup Server, type the IP address of the other SmartStor on your network.

6. Under Schedule, click the option button for the schedule type you want:
   - **Disable** – Disables NAS Replication
   - **Do it at once** – Performs a NAS Replication when you click the **OK** button.
   - **Time interval by hour** – Set an hourly interval for NAS Replications to happen.
   - **Daily** – Sets the time of day when the NAS Replications happen.
   - **Weekly** – Sets the time of day and day of the week when the NAS Replications happen.
7. Click the **OK** button.

Enabling One Touch Backup

One Touch Backup is a feature that enables you to backup specified folders from your PC to the SmartStor by pressing a button on the front of the SmartStor.



To enable One Touch Backup:

1. In the Tree, click the **+** beside the **Backup** icon.
2. Click the **Client Backup** icon.
3. In the One Touch Backup tab, click the **Enable** option.
4. Click the **OK** button.

To disable One Touch Backup, click the **Disable** option, then click the **OK** button.

See “Chapter 4: One Touch Backup” on page 43.

Managing the Network Connection

This category includes the following topics:

- Viewing Network Setup Information (page 88)
- Making Network Settings (page 88)
- Working with Jumbo Frames (page 89)
- Setting up your DDNS Service (page 90)

Viewing Network Setup Information

To view network setup information:

1. In the Tree, click the **+** beside the **Network** icon.
2. Click the **Network Setup** icon.

   The current network setup for this SmartStor displays on the Information tab:

   - Computer Name
   - IP Address
   - Subnet Mask
   - Default Gateway IP Address
   - Primary Domain Name Server IP Address
   - Secondary Domain Name Server IP Address

   To change these settings, click the **Setup** tab.

Making Network Settings

To make network settings:

3. In the Tree, click the **+** beside the **Network** icon.
4. Click the **Network Setup** icon.
5. Click the **Setup** tab.
6. Optional. Type a name for the SmartStor in the Computer Name field.
7. Click an option button to choose an Internet Protocol option:
   - **Obtain an IP address automatically** – Choose this option to let your DHCP server make the network settings.
   - **Specify an IP address** – Choose this option if you want to make your network settings manually.

8. Optional. If you chose *Specify an IP address*, enter the following settings in the fields provided:
   - IP Address
   - Subnet Mask
   - Default Gateway IP Address
   - Primary Domain Name Server IP Address
   - Secondary Domain Name Server IP Address

   See your Network Administrator for help in making these settings.
9. Click the **OK** button to save your settings.

Working with Jumbo Frames

The term *jumbo frame* refers to a frame on a local area network that is larger than the standard 1518 byte size. SmartStor supports jumbo frames up to 9000 bytes.

On SmartStor, the frame size setting is called Maximum Transmission Unit (MTU). The default MTU or frame is 1500 bytes. This setting is appropriate for most users. See your Network Administrator before you change this setting.

To make frame size settings:

1. In the Tree, click the **+** beside the **Network** icon.
2. Click the **Network Setup** icon.
3. Click the **Jumbo Frame** tab.
4. From the MTU dropdown menu, choose the maximum MTU or frame size:
   - 1500 bytes (default)
   - 4000 bytes
   - 7000 bytes
   - 9000 bytes
5. Click the **OK** button to save your setting.

Setting up your DDNS Service

The Dynamic Domain Name Server service enables you to keep the same domain name even though your IP address changes.

You must register with Dynamic Network Services in order to obtain your domain name, user name, and password.

Follow this procedure to set up the DDNS service:

1. In the Tree, click the **+** beside the **Network** icon.
2. Click the **Network Setup** icon.
3. Click the **DDNS** tab.
4. Click the **Enable** option button beside Services.
5. Enter your domain name in the DDNS Name field.
6. Enter your User Name and Password in the fields provided.
7. Click the **OK** button to save your settings.

   Your DDNS service is now active.

Making Management Settings

This category includes the following topics:

- Viewing Service Status (page 91)
- Viewing the Event Log (page 92)
- Setting up SMTP Authentication (page 92)
- Viewing the Email Alert List (page 93)
- Adding an Email Alert Recipient (page 93)
- Deleting an Email Alert Recipient (page 93)
- Upgrading the System Firmware (page 93)
- Enabling and Disabling the Buzzer (page 94)
- Viewing UPS Status (page 94)
- Setting up a UPS (page 95)

Viewing Service Status

The SmartStor runs services to enable PCs to access the folders on the SmartStor and to work as a print server.

To view Service Status:

1. In the Tree, click the **+** beside the **Management** icon.
2. Click the **Service Status** icon.

   The status of each service displays on the Information tab.

   - **ON** – The service is running.
   - **OFF** – The service is not running.
3. If the service you want is OFF, click the **Enable** button to the right of the Service.

   Also see:

   “Setting up Windows Access” on page 70

   “Setting up UNIX/Linux Access” on page 71

   “Setting up for Macintosh Access” on page 72

   “Setting up for FTP Access” on page 73

   “Setting up your Print Server” on page 74

   “Setting up your DLNA Server” on page 74

   “Setting up your DDNS Service” on page 90

Viewing the Event Log

The event log keeps a log of the 20 most recent events on the SmartStor. You can use this information to review your actions and to diagnose problems.

To view the Event Log:

1. In the Tree, click the **+** beside the **Management** icon.
2. Click the **Event Log** icon.

   A list of the 20 most recent events displays on the Event Log tab.

   Events are ranked in severity as Information, Warning, and Error.

Setting up SMTP Authentication

In order to set up email alerts over a network, you must enable the SMTP service, specify a SMTP server, and in most cases, supply authentication information. See your Network Administrator for help with these settings.

To set up SMTP authentication:

1. In the Tree, click the **+** beside the **Management** icon.
2. Click the **Mail Alert** icon.
3. Click the **Setup** tab.
4. Next to Service, click the **Enable** option button.
5. In the SMTP Server field, type the IP address or the DNS name of your SMTP server.
6. In the From field, the sender's email address that you want to appear in the alert messages.
7. Next to SMTP Authentication:
   - Click the **Yes** option button to enable authentication.
   - Click the **No** option button to disable authentication.

   Note that most SMTP servers require authentication.
8. If you enabled authentication, to the following:
   - In the User Name field, type the mail server account name.
   - In the Password field, type the password of the mailer server account.
9. Click the **OK** button.

Viewing the Email Alert List

The SmartStor will send alerts via email to the recipients you designate.

To view a list of Email Alert recipients:

1. In the Tree, click the **+** beside the **Management** icon.
2. Click the **Mail Alert** icon.

   The list of recipients displays on the Mail List tab.

   See “Checking Your Email Inbox” on page 124 for an example of an email alert message.

Adding an Email Alert Recipient

You can have up to 32 Email Alert recipients.

To add an Email Alert recipient:

1. In the Tree, click the **+** beside the **Management** icon.
2. Click the **Mail Alert** icon.
3. Click the **Add** tab.
4. In the E-Mail Address field, type the recipient’s email address.
5. Click the **OK** button.

Deleting an Email Alert Recipient

To delete an Email Alert recipient:

6. In the Tree, click the **+** beside the **Management** icon.
7. Click the **Mail Alert** icon.
8. Click the **Delete** tab.
9. Click the option button beside the E-Mail Address you want to delete.
10. Click the **OK** button.
11. In the confirmation box, click the **OK** button.

Upgrading the System Firmware

See “Upgrading the Firmware” on page 145.

Installing an Application Plug-in

See “Installing Application Plug-ins” on page 147.

Enabling and Disabling the Buzzer

The SmartStor has a buzzer that sounds when the SmartStor is finished booting and when a problem is detected. The buzzer is enabled by default.

Promise recommends that you leave the buzzer enabled.

To disable the buzzer:

1. In the Tree, click the **+** beside the **Management** icon.
2. Click the **Buzzer** icon.
3. Click the **Disable** option button.
4. Click the **OK** button.

Click the **Enable** option button, then click the **OK** button to enable the buzzer.

Viewing UPS Status

If you have an APC Uninterruptable Power Supply (UPS) attached to the SmartStor, you can check its status in PASM.

To view UPS status:

1. In the Tree, click the **+** beside the **Management** icon.
2. Click the **APC UPS** icon.

   The Information tab displays the status of the UPS.

   If there is no UPS connected or recognized, the Status field reports "NO UPS."

Setting up a UPS

To set up a UPS:

1. Attach the APC UPS to one of the SmartStor's USB ports.
2. In the Tree, click the **+** beside the **Management** icon.
3. Click the **APC UPS** icon.
4. Click the **Setup** tab.

   The Setup tab enables you to tell the SmartStor how and when to shutdown after a power failure.

   Click the option button beside the shutdown option you want:

   - Disable (the SmartStor will continue to run until the UPS battery is depleted)
   - Shutdown when the UPS reaches a set percentage of reserve power
   - Shutdown when the UPS reaches a set number of minutes of remaining runtime
   - Shutdown after running on the UPS batteries for a set number of minutes
5. Optional. If you chose battery percentage, type a percentage amount in the % field.
6. Optional. If you chose remaining runtime or running on batteries, type the number of minutes into the Mins. field.
7. Click the **OK** button.

Managing Services

This category includes the following topics:

- Setting System Date and Time (page 96)
- Running the Network Time Protocol (page 96)
- Viewing the Results of NTP Synchronization (page 97)
- Rebooting the SmartStor (page 97)
- Shutting Down the SmartStor (page 98)
- Restarting the SmartStor (page 98)
- Locating the SmartStor (page 98)
- Viewing System Information (page 99)
- Viewing Enclosure Information (page 99)

Setting System Date and Time

1. To set the date and time on the SmartStor:
   In the Tree, click the **+** beside the **System** icon.
2. Click the **Date / Time** icon.
3. Click the **Setup** tab.
4. From the dropdown menus, choose the time and date values.
5. Click the **OK** button.

Running the Network Time Protocol

You can use the Network Time Protocol (NTP) to set the system date and time on your SmartStor to synchronize itself with an external Time Server.

To run the Network Time Protocol:

1. In the Tree, click the **+** beside the **System** icon.
2. Click the **Date / Time** icon.
3. Click the **Time Zone** tab.
4. From the dropdown menu, choose the time zone for your location.
5. Click the **OK** button.
6. Click the **NTP** tab.
7. In the Time Server field, type the URL of the time server you want to use.
   URL *time.nist.gov* is the default.

8. Under Schedule, choose one of the options:
   - **Disable** – Disables NTP synchronization
   - **Do it at once** – Performs a synchronization when you click the OK button.
   - **Time interval by hour** – Set an hourly interval for a synchronization to happen.
   - **Daily** – Sets the time of day when the synchronization happens.
   - **Weekly** – Sets the time of day and day of the week when the synchronization happens.
9. Click the **OK** button.

Viewing the Results of NTP Synchronization

To view the results of an NTP synchronization:

1. In the Tree, click the **+** beside the **System** icon.
2. Click the **Date / Time** icon.
3. Click the **NTP** tab.

   The results of the latest synchronization are displayed:
   - **Last Synchronization Time** – Time and date of the last synchronization
   - **Last Synchronization Result** – OK means success

Rebooting the SmartStor

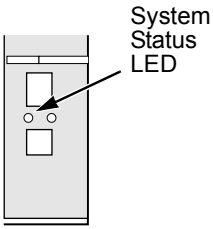
Normally you will only need to reboot the SmartStor is after a firmware upgrade or a plug-in installation. See “Upgrading the Firmware” on page 145. During the reboot, none of your folders will be accessible from your networked PCs.

To reboot the SmartStor:

1. In the Tree, click the **+** beside the **System** icon.
2. Click the **Reboot / Shutdown** icon.
3. Click the **Reboot** option.
4. Click the **OK** button.
5. In the confirmation box, click the **OK** button.

   The reboot runs automatically. When the SmartStor is fully booted:
   - The system status LED turns green (right)
   - The buzzer beeps one time (if the buzzer is enabled)

   See “Enabling and Disabling the Buzzer” on page 94.



Shutting Down the SmartStor

The only time you need to shut down the SmartStor is to replace the disk drive cooling fan or the power supply. See “Appendix B: Maintenance” on page 145.

During and after the shutdown, none of your folders will be accessible from your networked PCs.

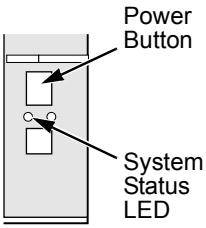
Using PASM

To shut down the SmartStor:

1. In the Tree, click the **+** beside the **System** icon.
2. Click the **Reboot / Shutdown** icon.
3. Click the **Shutdown** option.
4. Click the **OK** button.
5. In the confirmation box, click the **OK** button.

Directly

To shut down the SmartStor, press and hold the power button for five seconds. The system status LED turns red, then goes dark (right).



Restarting the SmartStor

To restart the SmartStor after a shutdown, press the power button on the front of the SmartStor chassis (right).

When the SmartStor is fully booted:

- The system status LED turns green (right)
- The buzzer beeps one time (if the buzzer is enabled)

See “Enabling and Disabling the Buzzer” on page 94.

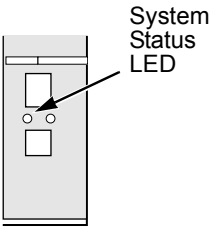
Locating the SmartStor

If your SmartStor in is on a rack with other equipment and you need to locate it quickly, this function will assist you.

To locate the SmartStor:

1. In the Tree, click the **+** beside the **System** icon.
2. Click the **System Information** icon.
3. Click the **System Information** tab.
4. Click the **Locate** button.

   The SmartStor’s buzzer beeps three times and the system status LED blinks three times (right).



Viewing System Information

To view system information:

1. In the Tree, click the **+** beside the **System** icon.
2. Click the **System Information** icon.
3. Click the **System Information** tab.

   System Information includes:

   - **Operating System** – Embedded Linux
   - **Firmware Version** – Changes when you upgrade the firmware. See “Upgrading the Firmware” on page 145
   - **CPU model** – MPC 8343
   - **Network Adapter** – Gigabit Ethernet
   - **Network Flow** – Inflow and Outflow speeds in bits per second

Viewing Enclosure Information

To view enclosure information:

1. In the Tree, click the **+** beside the **System** icon.
2. Click the **System Information** icon.
3. Click the **Enclosure Information** tab.

   Enclosure Information includes:

   - CPU temperature
   - System temperature
   - System Fan Speed
   - Power Status 5V
   - Power Status 12V
   - Power Status 3.3V

   If any values are out of specification, see “Checking Enclosure Status in PASM” on page 120.

Chapter 7: Technology Background

- Introduction to RAID (below)
- Choosing a RAID Level (page 106)
- Spare Drive (page 107)
- Partition and Format (page 108)
- RAID Volume Migration (page 109)

Introduction to RAID

RAID (Redundant Array of Independent Disks) allows multiple disk drives to be combined together into a RAID Volume. You create a RAID Volume on your SmartStor when you perform the setup procedure, either in the NAS Setup Wizard or the PASM Setup Wizard.

The benefits of a RAID can include:

- Higher data transfer rates for increased server performance
- Increased overall storage capacity for a single Volume
- Data redundancy/fault tolerance for ensuring continuous system operation in the event of a disk drive failure

Different RAID levels use different organizational models and have varying benefits. Also see “Choosing a RAID Level” on page 106. The following outline breaks down the properties for each RAID level supported on the SmartStor:

RAID 0 – Stripe

When a RAID Volume is striped, the read and write blocks of data are interleaved between the sectors of multiple disk drives. Performance is increased, since the workload is balanced between drives or “members” that form the RAID Volume. Identical drives are recommended for performance as well as data storage efficiency.

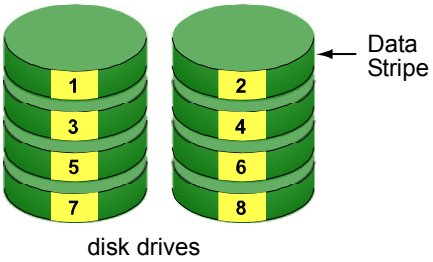


Figure 1. RAID 0 Striping interleaves data across multiple drives

The RAID Volume’s data capacity equals the capacity of the smallest disk drive times the number of disk drives. For example, one 100 GB and three 120 GB drives will form a 400 GB (4 x 100 GB) RAID Volume instead of 460 GB.

If disk drives of different capacities are used, there will also be unused capacity on the larger drives.

Because RAID 0 does not offer Fault Tolerance, meaning that you cannot recover your data after a disk drive failure, Promise does not recommend a RAID 0 Volume for your SmartStor.

RAID 0 Volumes on SmartStor consist of one or more disk drives.

RAID 1 – Mirror

When a RAID Volume is mirrored, identical data is written to a pair of disk drives, while reads are performed in parallel. The reads are performed using elevator seek and load balancing techniques where the workload is distributed in the most efficient manner. Whichever drive is not busy and is positioned closer to the data will be accessed first.

With RAID 1, if one disk drive fails or has errors, the other mirrored disk drive continues to function. This is called Fault Tolerance. Moreover, if a spare disk drive is present, the spare drive will be used as the replacement drive and data will begin to be mirrored to it from the remaining good drive.

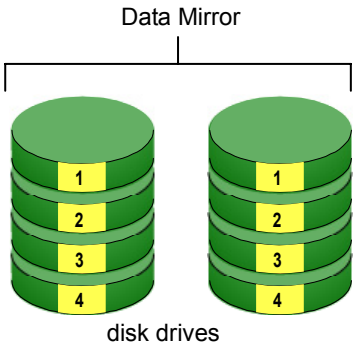


Figure 2. RAID 1 Mirrors identical data to two drives

The RAID Volume's data capacity equals the smaller disk drive. For example, a 100 GB disk drive and a 120 GB disk drive have a combined capacity of 100 GB in a mirrored RAID Volume.

If disk drives of different capacities are used, there will also be unused capacity on the larger drive.

RAID 1 Volumes on SmartStor consist of two disk drives.

If you want a mirrored RAID Volume with more than two disk drives, see "RAID 10 – Mirror / Stripe" on page 105.

RAID 5 – Block Striping with Distributed Parity

RAID 5 organizes block data and parity data across the disk drives. Generally, RAID level 5 tends to exhibit lower random write performance due to the heavy workload of parity recalculation for each I/O. RAID 5 works well for file, database, application and web servers.

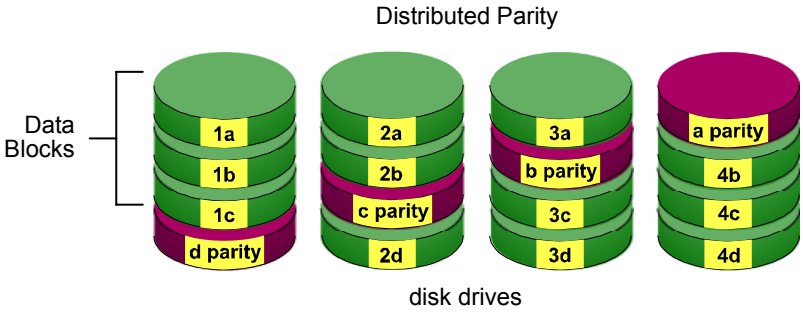


Figure 3. RAID 5 Stripes all drives with data and parity information

The capacity of a RAID 5 Volume equals the smallest disk drive times the number of disk drives, minus one. Hence, a RAID 5 Volume with four 100 GB disk drives will have a capacity of 300 GB. A RAID Volume with two 120 GB disk drives and one 100 GB disk drive will have a capacity of 200 GB.

RAID 5 is generally considered to be the most versatile RAID level.

RAID 5 requires a minimum of three disk drives.

RAID 10 – Mirror / Stripe

Mirror/Stripe combines both of the RAID 0 and RAID 1 types. RAID 10 can increase performance by reading and writing data in parallel while protecting data with duplication. At least four disk drives are needed for RAID 10 to be installed. With a four-disk-drive RAID Volume, one drive pair is mirrored together then striped over a second drive pair.

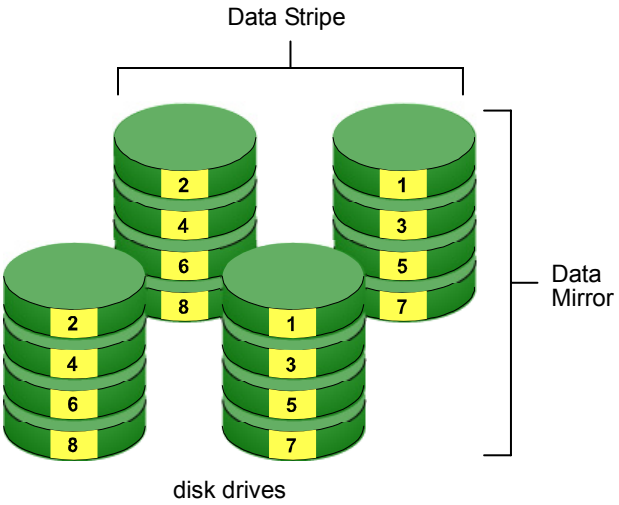


Figure 4. RAID 10 takes a data mirror on one drive pair and stripes it over two drive pairs

The data capacity RAID 10 Volume equals the capacity of the smallest disk drive times the number of disk drives, divided by two.

In some cases, RAID 10 offers double fault tolerance, depending on which disk drives fail.

RAID 10 Volumes on SmartStor consist of four disk drives.

Because all of the available disk drives are used for the RAID Volume, you cannot set up a spare drive with RAID 10.

Choosing a RAID Level

There are several issues to consider when choosing the RAID level for your Volume. The following discussion summarizes some advantages, disadvantages and applications for each choice.

RAID 0

Advantages	Disadvantages
Implements a striped disk RAID Volume, the data is broken down into blocks and each block is written to a separate disk drive I/O performance is greatly improved by spreading the I/O load across many channels and drives No parity calculation overhead is involved	Not a true RAID because it is not fault-tolerant The failure of just one drive will result in all data in an RAID Volume being lost Should not be used in mission critical environments

Recommended applications for RAID 0:

- Image Editing
- Pre-Press Applications
- Any application requiring high bandwidth

RAID 1

Advantages	Disadvantages
Simplest RAID storage subsystem design Can increase read performance by processing data requests in parallel since the same data resides on two different drives	Very high disk overhead - uses only 50% of total capacity

Recommended applications for RAID 1:

- Accounting/Financial
- Payroll
- Any application requiring very high availability

RAID 5

Advantages	Disadvantages
High Read data transaction rate Medium Write data transaction rate Good aggregate transfer rate Most versatile RAID level	Disk failure has a medium impact on throughput

Recommended applications for RAID 5:

- File and Application servers
- WWW, E-mail, and News servers
- Intranet servers

RAID 10

Advantages	Disadvantages
Implemented as a mirrored RAID Volume whose segments are RAID 0 RAID Volumes High I/O rates are achieved thanks to multiple stripe segments	Very high disk overhead – uses only 50% of total capacity

Recommended applications for RAID 10:

- Imaging applications
- Database servers
- General fileserver

Spare Drive

A spare is a disk drive that has been designated to replace a failed disk drive in a RAID Volume. In the event of the failure of a disk drive within a RAID 1 or three-drive RAID 5 Volume, the spare drive is activated as a member of the RAID Volume to replace a disk drive that has failed.

A spare drive cannot replace the failed drive in a RAID 0 Volume because of the way in which data is written to the disk drives under RAID 0.

A spare drive is not available for a RAID 10 Volume because RAID 10 requires all four disk drives in the SmartStor enclosure. However, when you replace the failed disk drive, the SmartStor will automatically rebuild the RAID Volume using the new disk drive.

You must designate a disk drive as a Spare. By default, and unassigned disk drive is Free. Use PASM to designate the Free disk drive as a Spare. See

Maintaining a spare drive is a good precaution to protect your RAID Volume integrity in the event of disk drive failure.

Automatic Rebuilding

When a disk drive in your RAID 1, 5, or 10 Volume fails, and a replacement disk drive becomes available, the RAID Volume will rebuild itself to the new disk drive automatically.

For RAID 1 and three-drive RAID 5 Volumes, you can designate a spare drive. If a spare drive is present when the RAID Volume experiences a disk drive failure, the rebuild will start automatically using the spare drive.

For RAID 1, RAID 5, and RAID 10 Volumes without a spare drive, the RAID Volume will begin to rebuild itself automatically when you remove the failed disk drive and install a new disk drive.

A RAID 0 Volume cannot be rebuilt because of the way in which data is written to the disk drives under RAID 0. Even if there is a designated spare drive, rebuilding is not possible for RAID 0 Volumes.

Partition and Format

When you create a RAID Volume on SmartStor, the RAID Volume is automatically partitioned and formatted for you.

To use your RAID Volume, you must create Folders on the RAID Volume and assign services to those Folders according to your requirements. SmartStor provides file services for Windows, UNIX/Linux and Macintosh, so all of those PCs can access the folders on the SmartStor, even though each PC might have a different file system.

RAID Volume Migration

Migration is the process of:

- Changing the RAID level
- Adding disk drives but keeping the same RAID level

In the migration process, the existing RAID Volume is called the *Source*. The proposed RAID Volume is called the *Target*. Each target RAID Volume has certain requirements and they are different for each RAID level. You must meet all of the requirements in order to successfully migrate a RAID Volume.

In most cases, you must add one or more disk drives during the migration process. You can never reduce the number of disk drives.

While the migration is running, you can still access the folders on your RAID Volume and the data they contain.

The tables below shows the migration options for a source RAID Volume according to its RAID level. The available target RAID levels are shown with their requirements.

RAID 0

A RAID 0 source Volume can migrate to the following target RAID levels:

Target	Requirements
RAID 0	Add disk drives.
RAID 1	2 disk drives only. Only a 1-drive RAID 0 can migrate to RAID 1. Add 1 disk drive.
RAID 5	3 disk drives minimum. At least 1 more disk drive than the RAID 0 RAID Volume.

RAID 1

A RAID 1 source Volume can migrate to the following target RAID levels:

Target	Requirements
RAID 0	Can use same number of disk drives.
RAID 5	3 disk drives minimum. At least 1 more disk drive than the RAID 1 RAID Volume.

RAID 5

A RAID 5 source Volume can migrate to the following target RAID levels:

Target	Requirements
RAID 0	Can use same number of disk drives.
RAID 5	Add a disk drive.

RAID 10

A RAID 10 source Volume cannot migrate or add more disk drives.

Chapter 8: Troubleshooting

- Responding to an Audible Alarm (page 111)
- Checking the System Status LED (page 112)
- Checking Disk Status LEDs (page 112)
- Replacing a Failed Disk Drive (page 113)
- Checking RAID Volume Status in PASM (page 113)
- Checking File System Status in PASM (page 115)
- Checking the Event Log in PASM (page 116)
- Checking Enclosure Status in PASM (page 120)
- Resolving Connections with SmartSYNC (page 121)
- Solving Network Connection Problems (page 123)
- Restoring the Default Password (page 124)
- Resolving a Windows Firewall Issue (page 125)

This chapter deals problems you might encounter with your SmartStor and how to resolve them. Also see “Frequently Asked Questions” on page 127.

Responding to an Audible Alarm

The SmartStor has two beep patterns

- **Single beep, not repeated** – The SmartStor is online
- **Two beeps, continuously repeated** – The SmartStor reports a problem

When you boot or reboot the SmartStor, and the buzzer is enabled, the buzzer sounds one time to indicate that the SmartStor is online.

If you hear the two-beep pattern, check the following items:

- System Status LED (see below)
- Drive Status LED (see page 112)
- RAID Volume status in PASM (see page 113)
- File System status in PASM (see page 115)
- Enclosure status in PASM (see page 120)
- Event Log in PASM (see page 116)
- Your email inbox (see page 124)

Checking the System Status LED

The SmartStor system status LED (see Figure 1.) reports the condition of the Enclosure fan and power supply:

- **Green** – Normal Enclosure function
- **Amber** – There is a problem with the fan or power supply
- **Red** – The fan, power supply, or file system has failed

If your SmartStor is configured to work with a UPS, it will continue to run after a power supply failure.

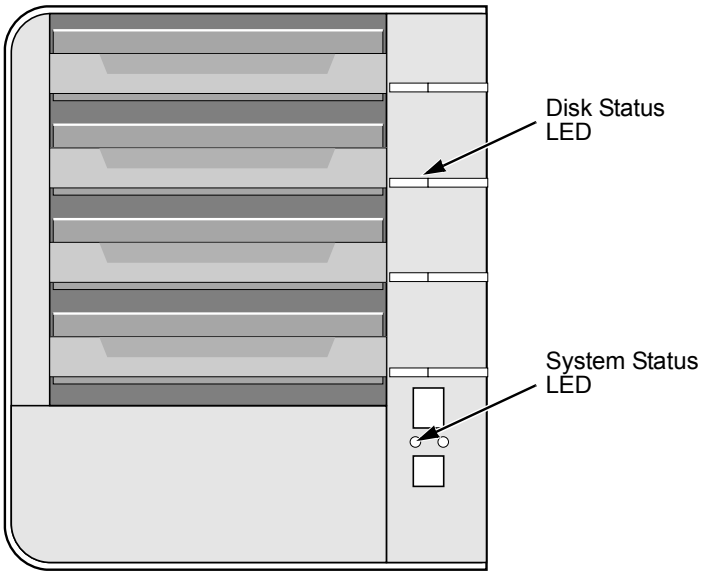
Checking Disk Status LEDs

The disk status LEDs (see Figure 1.) report the condition of the disk drives:

- **Green** – Normal disk drive function
- **Amber** – Rebuilding to this disk drive
- **Red** – Failed disk drive
- **Dark** – No disk drive is installed

See “Replacing a Failed Disk Drive” on page 113.

Figure 1. SmartStor Disk and System Status LEDs



Replacing a Failed Disk Drive

If a disk drive fails, the Disk Status LED is red. See Figure 1. If the disk drive belongs to a RAID Volume, the Volume goes Critical or Offline. See “Checking RAID Volume Status in PASM” on page 113.

Replace the failed disk drive with a new disk drive of the same or slightly greater capacity. You do not have to power down the SmartStor.

1. Open the SmartStor’s front door.
2. Pull out the drive carrier with the failed drive.
3. Remove the failed disk drive from the drive carrier.
4. Install a new disk drive into the carrier.
5. Place the carrier with the new disk drive back into the open slot in the SmartStor.

If the failed drive belonged to a RAID Volume, the RAID Volume will begin rebuilding as soon as the new drive is installed.

During the Rebuild, the Disk Status LED show amber. When the Rebuild is finished, the Disk Status LED turns green.

If the replacement drive is free, that is, not assigned to a RAID Volume or as a spare, the Disk Status LED remains dark after you install the new drive.

Checking RAID Volume Status in PASM

To view RAID Volume status:

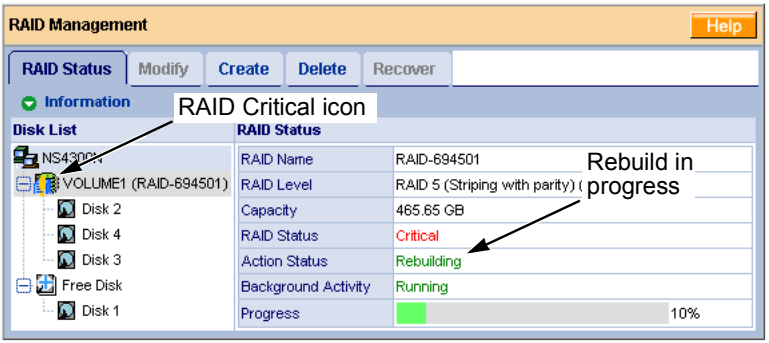
1. Start PASM.

   See “PASM in your Browser” on page 60.

   Or see “PASM in SmartSYNC” on page 61.
2. In the Tree, click the **+** beside the **RAID & File System** icon.
3. Click the **RAID Management** icon.

   The status is displayed in the **RAID Status** tab.

Figure 2. PASM reports a Critical RAID Volume



SmartStor Responds to a Critical RAID Volume

How the SmartStor responds to a Critical RAID Volume depends on the RAID level of your Volume and whether you have a spare drive available:

- For a RAID 1 Volume or a three-drive RAID 5 Volume, if a spare drive is available, the RAID Volume begins rebuilding itself automatically.
- For RAID 1, 5, and 10 Volumes, when no spare drive is available, you must replace the failed disk drive. The RAID Volume will begin rebuilding itself when you install the new disk drive. See “Replacing a Failed Disk Drive” on page 113.
- RAID 0 Volumes go *offline* after a disk drive failure. A RAID 0 Volume cannot be rebuilt. All data on the Volume is lost.

Additional Details about Rebuilds

- The Rebuild takes several minutes, depending on the size of your disk drives.
- During a rebuild, you can access your folders on the SmartStor.
- When you replace the failed disk drive with a new disk drive, the new disk drive becomes a Free Drive.

Responding to an Invalid RAID Volume

The SmartStor considers a RAID Volume *invalid* when the RAID Volume was created by a different SmartStor. However, the RAID Volume itself remains functional and the data on it is safe.

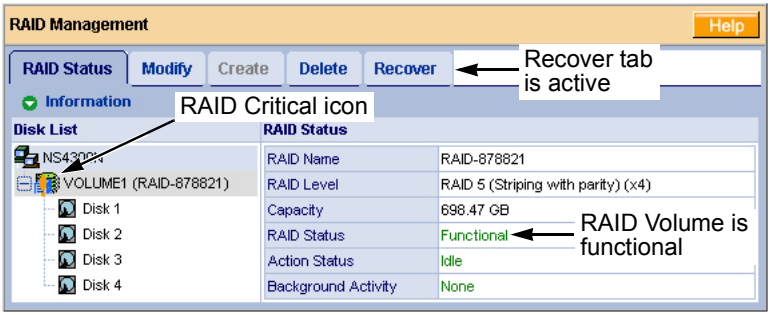
This condition could happen when you:

- Move the disk drives from one SmartStor to a different SmartStor.
- Remove the disk drives in order to send your SmartStor for service.

When the SmartStor's memory does not recognize the RAID Volume, so PASM displays the RAID Volume as invalid. See Figure 3.

Use the Recover function to validate the RAID Volume. The Recover tab is only active when an invalid RAID Volume is present and can be recovered.

Figure 3. An invalid RAID Volume in PASM



Using the Recover Function

To validate the RAID Volume:

1. In the Tree, click the **+** beside the **RAID & File System** icon.
2. Click the **RAID Management** icon.
3. Click the **Recover** tab.
4. On the **Recover** tab, click the option button beside the invalid RAID Volume.
5. Click the **OK** button.

   The SmartStor will reboot itself to update its configuration and recognize the RAID Volume.

Important

Running the Recover function might erase some or all of your SmartStor settings. If that condition happens, run the NAS Setup Wizard. See "Setting up the SmartStor" on page 13.

Checking File System Status in PASM

Typically the first indication of a problem with the SmartStor's file system is when your network drive becomes unavailable.

You might also see the message, "File system contains errors. Please check." when you click the icons under the File & Print menu.

To view File System status:

1. Start PASM.

   See “PASM in your Browser” on page 60.

   Or see “PASM in SmartSYNC” on page 61.
2. In the Tree, click the **+** beside the **RAID & File System** icon.
3. Click the **File System Management** icon.
4. Look for the RAID Volume icon on the **File System Status** tab.

   If the RAID Volume icon is Critical (has a yellow !), the file system contains errors and you must rebuild the file system. See below.

Rebuilding the File System

Caution

When you rebuild a File System, you delete all the folders in the RAID volume and all the data saved in the folders.

To rebuild a File System:

1. In the Tree, click the **+** beside the **RAID & File System** icon.
2. Click the **File System Management** icon.
3. In the **File System Status** tab, click the RAID Volume Critical icon to display the **Rebuild File System** button.
4. Click the **Rebuild File System** button.
5. In the confirmation box, type **yes** into the field provided, then click the **OK** button.

Checking the Event Log in PASM

To view the Event Log in PASM:

To check Enclosure status:

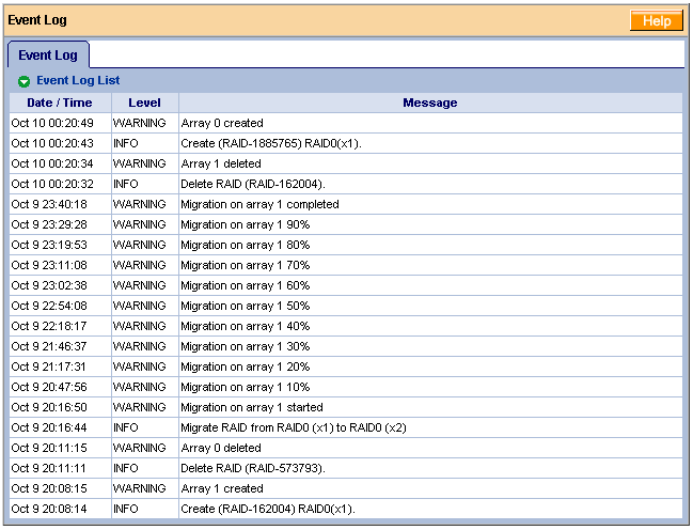
1. Start PASM.

   See “PASM in your Browser” on page 60.

   Or see “PASM in SmartSYNC” on page 61.
2. In the Tree, click the **+** beside the **Management** icon.
3. Click the **Event Log** icon.

   The Event Log displays. See Figure 4.

Figure 4. The PASM Event Log



Date / Time	Level	Message
Oct 10 00:20:49	WARNING	Array 0 created
Oct 10 00:20:43	INFO	Create (RAID-1885765) RAID0(x1).
Oct 10 00:20:34	WARNING	Array 1 deleted
Oct 10 00:20:32	INFO	Delete RAID (RAID-162004).
Oct 9 23:40:18	WARNING	Migration on array 1 completed
Oct 9 23:29:28	WARNING	Migration on array 1 90%
Oct 9 23:19:53	WARNING	Migration on array 1 80%
Oct 9 23:11:08	WARNING	Migration on array 1 70%
Oct 9 23:02:38	WARNING	Migration on array 1 60%
Oct 9 22:54:08	WARNING	Migration on array 1 50%
Oct 9 22:18:17	WARNING	Migration on array 1 40%
Oct 9 21:46:37	WARNING	Migration on array 1 30%
Oct 9 21:17:31	WARNING	Migration on array 1 20%
Oct 9 20:47:56	WARNING	Migration on array 1 10%
Oct 9 20:16:50	WARNING	Migration on array 1 started
Oct 9 20:16:44	INFO	Migrate RAID from RAID0 (x1) to RAID0 (x2)
Oct 9 20:11:15	WARNING	Array 0 deleted
Oct 9 20:11:11	INFO	Delete RAID (RAID-573793).
Oct 9 20:08:15	WARNING	Array 1 created
Oct 9 20:08:14	INFO	Create (RAID-162004) RAID0(x1).

4. Check the Event Log for reports of disk drive failure or other problems.

Responding to Events

All events are reported in the Event Log. Most events are simply reports that the SmartStor is responding to your commands.

Many events are also reported via email. The SmartStor's buzzer sounds for serious events that require your attention.

A list of event categories is shown below:

- File System (page 117)
- NAS Replication (page 118)
- Snapshots (page 118)
- System (enclosure) (page 118)
- Disk Drives (page 119)
- RAID Volumes (page 119)

Reported Event	Corrective Action
File System	
File system of volume X content errors! Check the system before continuing.	The file system has a problem. Reboot the SmartStor and check file system again. If the event appears again, the file system has crashed. Rebuild the file system. See page 116.

Reported Event	Corrective Action
File system capacity usage of volume X is over 90%.	Reduce the number or size of the files or expand the volume size. See “Migrating a RAID Volume” on page 81.
File system capacity usage of volume X is 100%.	
Rebuilding file system...	The file system is being rebuild by user action.
NAS Replication	
NAS replication is completed.	NAS replication has finished. Normal.
System is busy. NAS replication is abort!	The RAID Volume is currently formatting, rebuilding, or migrating. Wait until this process is done. Then try the replication again.
System is doing another replication. NAS replication is abort!	The SmarStor is currently doing a replication. Wait until the current replication is done. Then try the second replication again.
NAS replication is failed!	There is a failed network connection between the two SmartStors. Correct the problem and try again. See page 123.
Snapshots	
The snapshot capacity usage which timestamp is [date and time] of volume X is over 90%.	Move the snapshot volume to another storage location. Or delete the snapshot and then create a new one. See page 84.
System is busy. Snapshot creation was aborted!	The RAID Volume is currently formatting, rebuilding, or migrating. Wait until this process is done. Then try the snapshot again.
System is creating another snapshot. Snapshot creation was aborted!	The SmarStor is currently doing a snapshot. Wait until the current snapshot is done. Then try the second snapshot again.
System (enclosure)	
System is starting to work.	Normal.
System is rebooting.	
System is shutting down.	

Reported Event	Corrective Action
System was shut down abnormally.	The SmartStor shut down incorrectly the last time. See “Shutting Down the SmartStor” on page 98.
CPU temperature is higher than 50°C/122°F. System will shut down.	Allow the SmartStor to cool for several minutes. Then restart the SmartStor and check system temperature and fan operation. See page 120.
System temperature is higher than 50°C/122°F. System will shut down.	Be sure there is adequate air circulation around the SmartStor.
System fan speed is lower than 1500 RPM. Check the system before continuing.	Replace the fan. See page 148.
AC Power failure. System will shut down.	Restore the AC power. Then restart the SmartStor. See “Connecting the Power” on page 8.
Disk Drives	
Task X timeout on disk Y at LBA [address]	A LBA error. Check the disk drives. See page 112. Check the RAID Volume. See page 113. Replace the disk drive or rebuild the RAID Volume as needed.
Task X disk error on disk Y at LBA [address] with status Z	
S.M.A.R.T threshold exceeded on disk X	Check the disk drives. See page 112. Replace the failed drive. See page 113.
BSL update on disk X at LBA [address]	Bad sector on a disk drive. Check the disk drives. See page 112. Replace the disk drive if it continues to receive BSL updates.
BSL log disk X at LBA [address] cleared	Check the disk drives. See page 112.
Delete Spare Disk	Delete a spare drive. Normal.
RAID Volumes	
Create [RAID name, RAID level and X number of disk drives]	Create a RAID Volume. Normal.
Delete RAID X	Delete a RAID Volume. Normal.
Migration or Rebuilding on array X started.	RAID Volume Migration or Rebuild has started. Normal.
Migration or Rebuilding on array X at Y%.	Progress report on RAID Volume Migration or Rebuild. Normal.

Reported Event	Corrective Action
Migration or Rebuilding on array X paused at Y%.	RAID Volume Migration or Rebuild was paused temporarily by user action.
Migration or Rebuilding on array X resumed at Y%.	RAID Volume Migration or Rebuild was paused and then resumed by user action.
Migration or Rebuilding on array X completed.	RAID Volume Migration or Rebuild has finished. Normal.
Migration or Rebuilding on array X aborted at Y%	RAID Volume Migration or Rebuild was aborted (stopped) by user action.
Migration or Rebuilding on array X aborted at Y% because of error.	RAID Volume Migration or Rebuild has aborted (stopped) because of an error. Check the disk drives. See page 112. Check the RAID Volume. See page 113.
RAID status: "OFFLINE". The NS4300N X volume Y is offline.	Check the disk drives. See page 112. Replace the failed drive. See page 113. Create a new RAID Volume. See page 80.
RAID status: "CRITICAL". The NS4300N X volume Y is not functioning correctly.	Check the disk drives. See page 112. Replace the failed drive. See page 113. The RAID Volume will rebuild automatically.
RAID X had some errors. Formatting was aborted!	Check the disk drives. See page 112. Replace the failed drive. See page 113.

Checking Enclosure Status in PASM

To check Enclosure status:

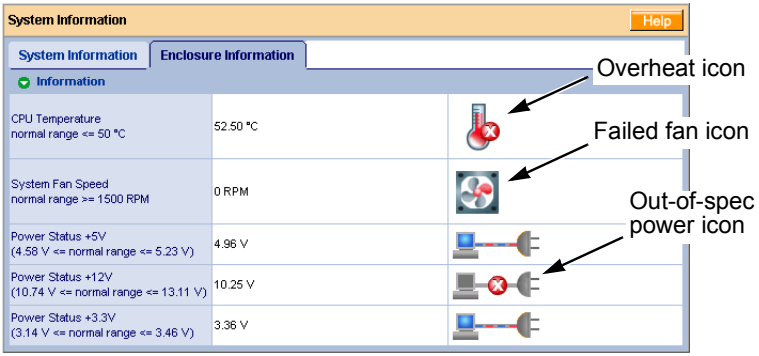
1. Start PASM.

   See “PASM in your Browser” on page 60.

   Or see “PASM in SmartSYNC” on page 61.
2. In the Tree, click the **+** beside the **System** icon.
3. Click the **System Information** icon.
4. Click the **Enclosure Information** tab.

   See Figure 5.

Figure 5. The Enclosure Information tab with malfunctions shown



The corrective action you take depends on the nature of the problem:

- If CPU temperature is above specification:
  - Be sure there is adequate air flow around the SmartStor.
  - Be sure the ambient temperature is below 35°C (95°F).
  - Check the fan speed.
- If the fan speed is below specification, contact Technical Support. See page 130.
- If any power status is out-of-specification, contact Technical Support. See page 130.

Resolving Connections with SmartSYNC

The SmartSYNC utility is designed to detect the SmartStor on your network. If SmartSYNC does not detect your SmartStor, check the following items:

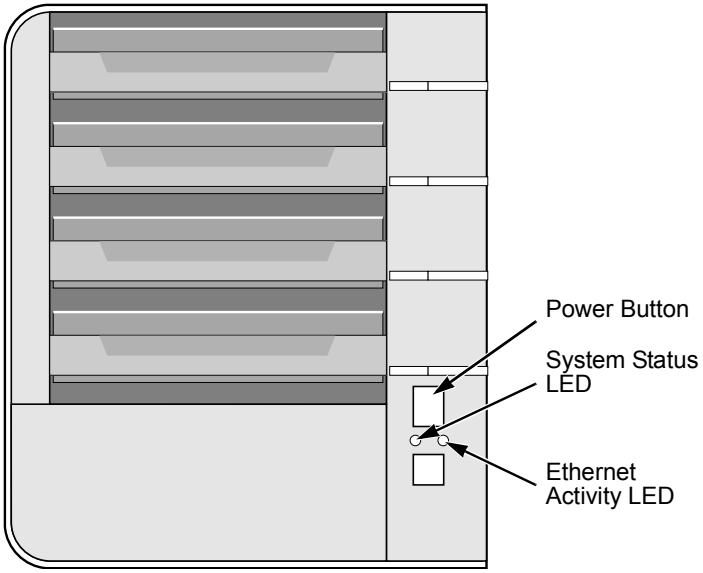
- Be sure the SmartStor is powered up and fully booted.

  The Power Button and System Status LED should be green. See Figure 6.
- Be sure the SmartStor is properly connected to your network.

  The Ethernet Activity LED should be green or blinking green. See Figure 6.

  If the Ethernet Activity LED is dark, see “Solving Network Connection Problems” on page 123.
- Be sure that SmartSYNC is looking on the same network where you connected the SmartStor.

Figure 6. Power Button, System Status and Ethernet Activity LEDs

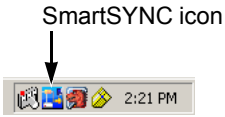


Multiple Network Connections

If your PC has multiple network connections, you must verify that SmartSYNC is looking on the network where the SmartStor is installed:

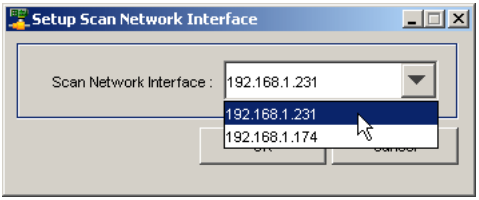
1. Open SmartSYNC.

   In the Windows application tray (lower right corner of the screen), double-click the SmartSYNC icon.



2. From the Option menu, choose *Scan Network Interface*.
3. In the dropdown menu, choose the IP address of the network interface card connected to the network where you installed the SmartStor. See Figure 7.

Figure 7. Scan Network Interface in SmartSYNC



Solving Network Connection Problems

Most network connection problems are the result of poor connections.

When the SmartStor is fully booted and connected to the network, the Ethernet Activity LED indicates status and activity:

- **Green** – Network link is properly connected
- **Flashing Green** – Network Activity
- **Dark** – No Connection

See Figure 6.

If your SmartStor is connected to your network but the Ethernet Activity LED on your SmartStor is dark, check the following items:

- Verify that the switch, hub, or facility network service connection that you are using is operational.

  Switches and hubs have LEDs that light when there is a connection and flash when there is activity.

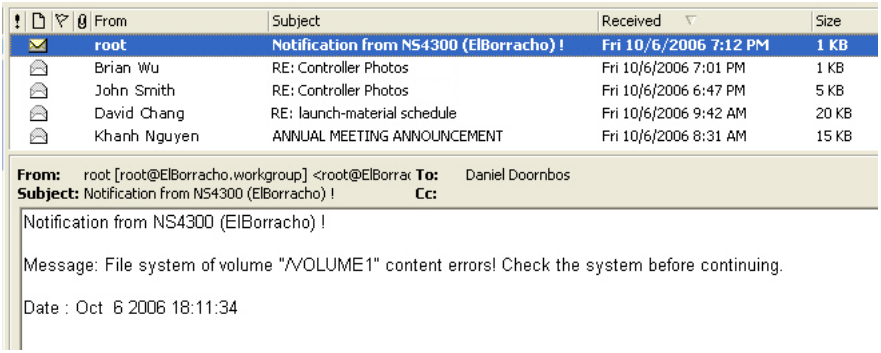
  Network service connections generally do not have LEDs to verify whether they actually are connected to the network. See your Network Administrator for assistance.
- Be sure the network cable is firmly attached to the SmartStor network connector at one end and to the network switch, hub, or facility network connection at the other.
- If the cable connections are good, remove the existing network cable and install a known-good network cable.

If you know your network devices are working properly and you know that your network cable is good, but the Ethernet Activity LED remains dark, see “Contacting Technical Support” on page 130.

Checking Your Email Inbox

If you enabled Mail Alert in PASM, the SmartStor will send you an email message when a problem arises. Look for a message from “root.”

Figure 8. Email message from the SmartStor.



See “Adding an Email Alert Recipient” on page 93 for more information about email alerts.

Restoring the Default Password

Normally, you change your password in PASM. See “Changing the Administrator’s Password” on page 65.

If you changed the password and then forgot the new password, you can reset the SmartStor to the default password: **admin**. Use a straightened paper clip or the tip of a ball-point pen as a reset tool.

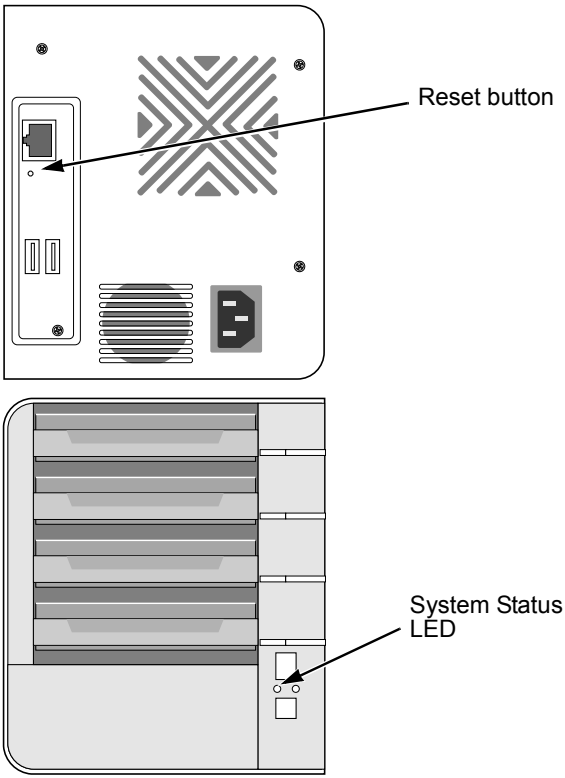
To reset the Administrator’s password:

1. Verify that the SmartStor is fully booted.
2. Insert your reset tool into the reset button hole on the back of the SmartStor.

   See Figure 9.
3. Press and hold the reset button for eight seconds, until the System Status LED flashes three times.

   The Administrator’s password is now reset to **admin**.

Figure 9. Reset button and System Status LED



Resolving a Windows Firewall Issue

If you a running a personal firewall on your Windows PC, the firewall might prevent the you from accessing the SmartStor over your network.

Follow this procedure to add an exception for the SmartStor:

1. From the Windows Start menu, choose *Settings*, then *Network Connections*.

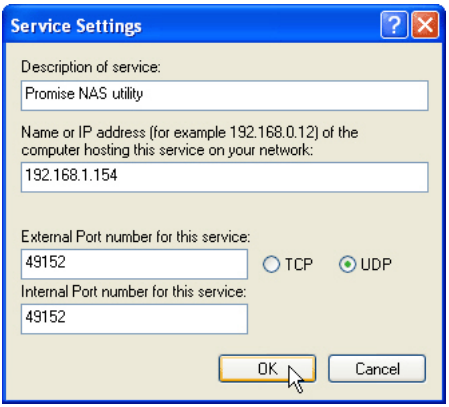
   The Network Connections window opens.
2. Right-click **Local Area Connection** and choose *Properties* from the popup menu.

   The local Area Connection properties dialog box opens.
3. Click the **Advanced** tab.
4. Click the **Settings** button.

The Windows Firewall dialog box opens.

5. Click the **Advanced** tab.
6. Under Network Connection Setting, click the **Settings** button.
   The Advanced Settings dialog box opens.
7. Click the **Add** button.
   The Service Settings dialog box opens.
8. In the Description of service field, type **Promise NAS utility**.
9. In the Name or IP address field, type the IP address of the SmartStor.
   See “Finding the SmartStor’s IP Address” on page 17.
10. In the External Port field, type **49152**.
11. Click the **UDP** option button.
12. In the Internal Port field, type **49152**.
13. Click the **OK** button.

Figure 10. Windows Firewall Advanced Service Settings



14. Click the **OK** buttons in the Advanced Settings, Windows Firewall, and Local Area Connection Properties dialog boxes.

Chapter 9: Support

- Frequently Asked Questions (below)
- Contacting Technical Support (page 130)
- Limited Warranty (page 133)
- Returning Product For Repair (page 135)

Frequently Asked Questions

Also see “Chapter 8: Troubleshooting” on page 111.

The SmartStor worked OK until I turned it off. When I turned it on again, my Windows network drive connection no longer works.

When you powered up the SmartStor, the DHCP server assigned a different IP address to the SmartStor. Here are two possible solutions:

- You may be able to reset the SmartStor’s IP address manually. See “Connecting a Network Drive” on page 52 or “Making Network Settings” on page 88.

  Note that changing the SmartStor’s IP address may cause an IP address conflict on your network. Check with your Network Administrator before taking this action.

- If you cannot restore the previous IP address, you must create new network drives and printer connections. See “Chapter 3: Connecting to the SmartStor” on page 21.

When I start Windows, a message displays that says, “Could not reconnect all network drives.”

The SmartStor reconnects to your PC shortly after Windows starts. In most cases, the SmartStor network drives will be available by the time you click them.

The NAS Setup Wizard cannot access the SmartStor over the network.

If you a running a personal firewall on your Windows PC, the firewall might prevent you from accessing folders on the SmartStor. You must do one of the following actions:

- Disable the firewall
- Add an exception for the SmartStor

See “Resolving a Windows Firewall Issue” on page 125.

I tried to connect my SmartStor as a network drive using SmartSYNC, but Windows displayed an error message.

There might be an IP address conflict between the SmartStor and another device on your network. See your Network Administrator for assistance.

I cannot log into the SmartStor with through the AD Domain.

Be sure you use a “domain name\user name” when you log into the SmartStor using SMB, FTP, or AFP. You must use the “\” character.

Many FTP clients do not support a space in the domain name or user name.

Also, the SmartStor does not support a user home directory.

How does the SmartStor integrate into an NIS Domain?

If the NIS domain account or group name is the same as the SmartStor, the SmartStor will apply them to its account or group.

If the SmartStor joins a NIS Domain, joining only affects the NFS service and Quota settings. The other services are not affected.

How are non-ASCII folder file names displayed?

The SmartStor supports Unicode, so you can use non-ASCII characters in your folder names. Windows 98 and ME do not support Unicode, so they cannot display your folder names properly. But you can still access your folders.

I tried to copy a Windows shortcut to my network drive, but an error message says there is not enough free disk space.

Normally, you can copy a Windows shortcut to a network drive. However, if the network drive is a USB drive or memory stick with FAT32 file format, the SmartStor might not recognize the shortcut and prevent you from copying it.

If this situation occurs, choose a different folder in which to copy the shortcut.

Does SmartStor support a USB drive or memory stick with FAT16 file format?

No. If you attach the FAT16 USB drive or memory stick to SmartStor, you can see the files on it. But if you attempt to copy files to the drive or memory stick, Windows might display a *disk full* message.

How do I remove a USB drive or memory stick from the SmartStor?

Be sure that no files on the USB drive or memory stick are still open. Then unplug the USB drive or memory stick from the SmartStor. The SmartStor automatically unmounts the USB drive or memory stick.

Can I do a One Touch Backup or a regular Backup on a protected folder or file on my Windows PC?

No. Windows does not allow SmartSYNC to access protected folders and files. If you want to perform a backup, you must first disable protection on your folders and files.

Which FTP clients are compatible with the SmartStor's FTP server?

Promise recommends FTP clients that support Unicode, such as Filezilla or Smart FTP for Windows, Filezilla for Linux, and Transmit v3.5.5 for Macintosh.

If your FTP client does not support Unicode, you have two choices:

- Use only ASCII characters to name your shared folders.
- Set your SmartStor for double-byte character encoding. See page 73.

I cannot find the DLNA Server tab under Protocol Control in PASM.

You must download and install the DLNA plug-in on your SmartStor to access this feature. See "Installing Application Plug-ins" on page 147.

Can I move the disk drives from one SmartStor to a different SmartStor?

Yes. However, to access the RAID Volume on the new SmartStor, you must run the Recover function. When SmartStor's memory does not match the RAID Volume on the disk drives, the RAID Volume is considered *invalid* and the Recover function becomes available. See "Responding to an Invalid RAID Volume" on page 114.

I set up email alert recipients but they never receive any messages.

In most cases, you must setup SMTP authentication in order for your alert messages to pass your SMTP server. See "Setting up SMTP Authentication" on page 92.

Can SmartStor handle jumbo frames?

Yes. But you must set the maximum frame size in PASM. See "Working with Jumbo Frames" on page 89.

Contacting Technical Support

Promise Technical Support provides several support options for Promise users to access information and updates. We encourage you to use one of our electronic services, which provide product information updates for the most efficient service and support.

If you decide to contact us, please have the following information available:

- Product model and serial number
- BIOS, firmware, and driver version numbers
- A description of the problem / situation
- System configuration information, including: motherboard and CPU type, hard drive model(s), SAS/SATA/ATA/ATAPI drives & devices, and other controllers.

Technical Support Services

Promise Online™ Web Site	http://www.promise.com/support (technical documents, drivers, utilities, etc.)

United States

E-mail Support	e-Support On-Line
Fax Support	(408) 228-1097 Attn: Technical Support
Phone Support	(408) 228-1400 option 4
If you wish to write us for support:	Promise Technology, Inc. 580 Cottonwood Drive Milpitas, CA 95035, USA

Europe, Africa, Middle East

E-mail Support	e-Support On-Line
Fax Support	+31 (0) 40 256 9463 Attn: Technical Support
Phone Support	+31 (0) 40 235 2600
If you wish to write us for support:	Promise Technology Europe B.V. Science Park Eindhoven 5542 5692 EL Son, The Netherlands

Germany

E-mail Support	e-Support On-Line
Fax Technical Support	+49 (0) 2 31 56 76 48 - 29 Attn: Technical Support
Phone Technical Support	+49 (0) 2 31 56 76 48 - 10
If you wish to write us for support:	Promise Technology Germany Europaplatz 9 44269 Dortmund, Germany

Italy

E-mail Support	e-Support On-Line
Fax Support	0039 06 367 12400 Attn: Technical Support
Phone Support	0039 06 367 12626
If you wish to write us for support:	Promise Technology Italy Piazza del Popolo 18 00187 Roma, Italia

Taiwan

E-mail Support	e-Support On-Line
Fax Support	+886 3 578 2390 Attn: Technical Support
Phone Support	+886 3 578 2395 (ext. 8811)
If you wish to write us for support:	Promise Technology, Inc. 2F, No. 30, Industry E. Rd. IX Science-based Industrial Park Hsin-Chu 30075, Taiwan (R.O.C.)

China

E-mail Support	e-Support On-Line
Fax Support	+86-10-8857-8015 Attn: Technical Support
Phone Support	+86-10-8857-8085/8095
If you wish to write us for support:	Promise Technology China Room 1205, Tower C Webok Time Center, No.17 South Zhong Guan Cun Street Hai Dian District, Beijing 100081, China

Limited Warranty

Promise Technology, Inc. (“Promise”) warrants that for three (3) years from the time of the delivery of the product to the original end user:

a) the product will conform to Promise’s specifications;

b) the product will be free from defects in material and workmanship under normal use and service.

This warranty:

a) applies only to products which are new and in cartons on the date of purchase;

b) is not transferable;

c) is valid only when accompanied by a copy of the original purchase invoice.

d) Is not valid on spare parts, fans, and power supplies

This warranty shall not apply to defects resulting from:

a) improper or inadequate maintenance, or unauthorized modification(s), performed by the end user;

b) operation outside the environmental specifications for the product;

c) accident, misuse, negligence, misapplication, abuse, natural or personal disaster, or maintenance by anyone other than a Promise or a Promise-authorized service center.

Disclaimer of other warranties

This warranty covers only parts and labor, and excludes coverage on software items as expressly set above.

Except as expressly set forth above, Promise DISCLAIMS any warranties, expressed or implied, by statute or otherwise, regarding the product, including, without limitation, any warranties for fitness for any purpose, quality, merchantability, non-infringement, or otherwise. Promise makes no warranty or representation concerning the suitability of any product for use with any other item. You assume full responsibility for selecting products and for ensuring that the products selected are compatible and appropriate for use with other goods with which they will be used.

Promise DOES NOT WARRANT that any product is free from errors or that it will interface without problems with your computer system. It is your responsibility to back up or otherwise save important data before installing any product and continue to back up your important data regularly.

No other document, statement or representation may be relied on to vary the terms of this limited warranty.

Promise's sole responsibility with respect to any product is to do one of the following:

a) replace the product with a conforming unit of the same or superior product;

b) repair the product.

Promise shall not be liable for the cost of procuring substitute goods, services, lost profits, unrealized savings, equipment damage, costs of recovering, reprogramming, or reproducing of programs or data stored in or used with the products, or for any other general, special, consequential, indirect, incidental, or punitive damages, whether in contract, tort, or otherwise, notwithstanding the failure of the essential purpose of the foregoing remedy and regardless of whether Promise has been advised of the possibility of such damages. Promise is not an insurer. If you desire insurance against such damage, you must obtain insurance from another party.

Some states do not allow the exclusion or limitation of incidental or consequential damages for consumer products, so the above limitation may not apply to you.

This warranty gives specific legal rights, and you may also have other rights that vary from state to state. This limited warranty is governed by the State of California.

Your Responsibilities

You are responsible for determining whether the product is appropriate for your use and will interface with your equipment without malfunction or damage. You are also responsible for backing up your data before installing any product and for regularly backing up your data after installing the product. Promise is not liable for any damage to equipment or data loss resulting from the use of any product.

Returning Product For Repair

If you suspect a product is not working properly, or if you have any questions about your product, contact our Technical Support Staff through one of our Technical Services, making sure to provide the following information:

- Product model and serial number (required)
- Return shipping address
- Daytime phone number
- Description of the problem
- Copy of the original purchase invoice

The technician will assist you in determining whether the product requires repair. If the product needs repair, the Technical Support Department will issue an RMA (Return Merchandise Authorization) number.

Important

Obtain an RMA number from Technical Support *before* you return the product and write the RMA number on the label. The RMA number is essential for tracking your product and providing the proper service.

Return ONLY the specific product covered by the warranty (do not ship cables, manuals, diskettes, etc.), with a copy of your proof of purchase to:

USA and Canada:	Promise Technology, Inc. Customer Service Dept. Attn.: RMA # _____ 47654 Kato Road Fremont, CA 94538
Other Countries:	Return the product to your dealer or retailer. Contact them for instructions before shipping the product.

You must follow the packaging guidelines for returning products:

- Use the original shipping carton and packaging
- Include a summary of the product's problem(s)
- Write an attention line on the box with the RMA number
- Include a copy of proof of purchase

You are responsible for the cost of insurance and shipment of the product to Promise. Note that damage incurred due to improper transport or packaging is not covered under the Limited Warranty.

When repairing returned product(s), Promise may replace defective parts with new or reconditioned parts, or replace the entire unit with a new or reconditioned unit. In the event of a replacement, the replacement unit will be under warranty for the remainder of the original warranty term from purchase date, or 30 days, whichever is longer.

Promise will pay for standard return shipping charges only. You will be required to pay for any additional shipping options (such as express shipping).

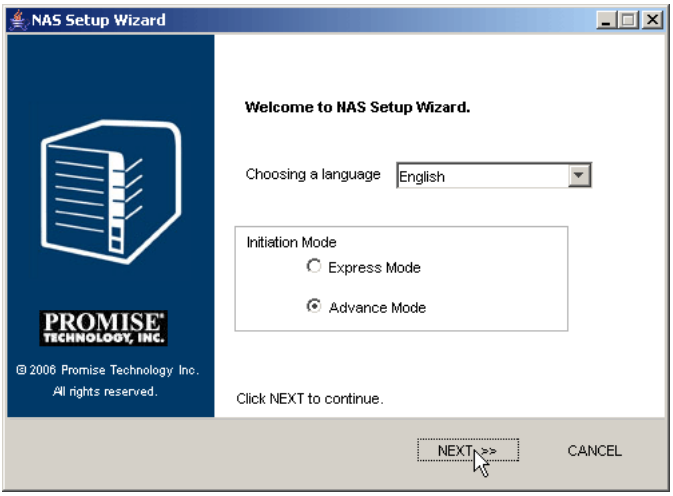
Appendix A: Setup Wizard Advanced Mode

The NAS Setup Wizard performs the setup procedures on your SmartStor.

To set up your SmartStor:

1. From the Windows Start menu, choose *Programs*, then *Promise NAS Utility*, and then *NAS Setup Wizard*.

   The NAS Setup Wizard welcome screen appears.



2. From the Choosing a language dropdown menu, choose the language you prefer.
3. Choose an Initiation Mode.

   Click the *Express Mode* option if ALL of these conditions apply:

   - You have a DHCP server on your network with addresses available.
   - You want data protection for your disk array.
   - You want to use date and time settings from your PC.

   Express Mode is recommended for most users.

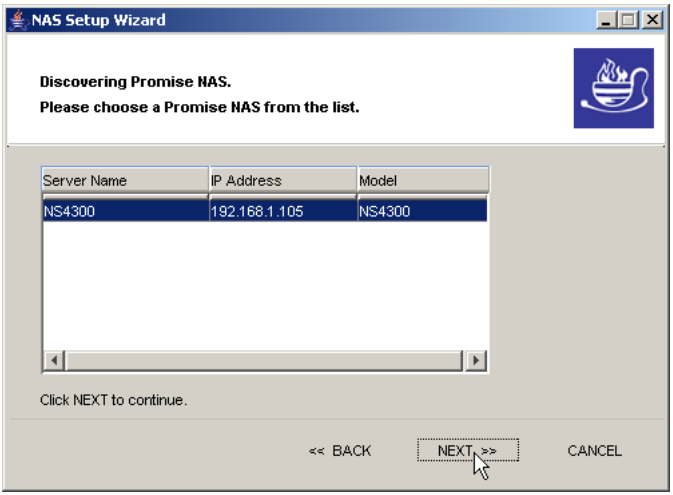
   Click the *Advanced Mode* option if one or more of these conditions apply:

   - You do not have a DHCP server on your network.
   - You have a DHCP server but no addresses are available.
   - You want to set the IP address manually.
   - You want maximum capacity (RAID 0) for your disk array.
   - You want to set date and time manually.

The rest of the setup instructions describe Advanced mode. For setup instructions using Express mode, see “Setting up the SmartStor” on page 13.

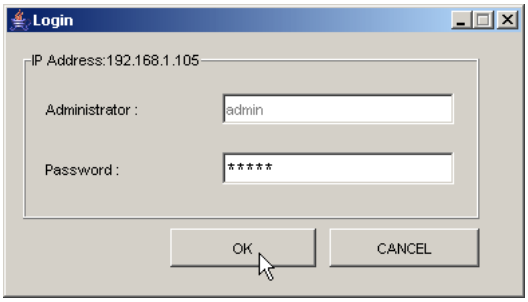
4. Click **Next >>** to continue.

   The Discovering Promise NAS screen appears.



5. Highlight the SmartStor you are initiating, then click **Next >>** to continue.

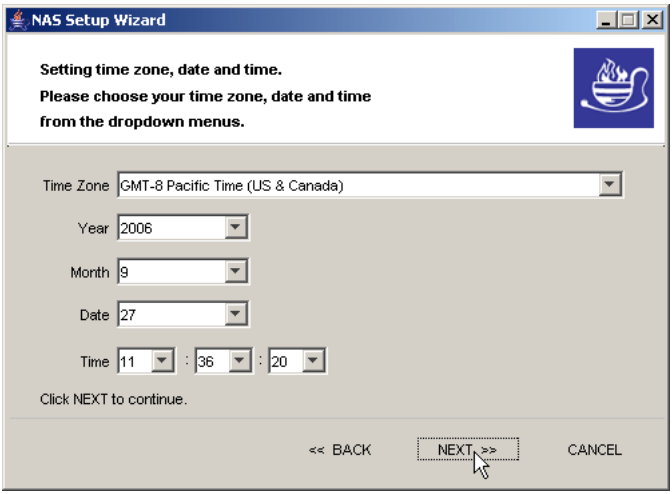
   The Login dialog box appears.



6. Type **admin** into the Password field, then click **OK**.

   The Administrator and password are case sensitive.

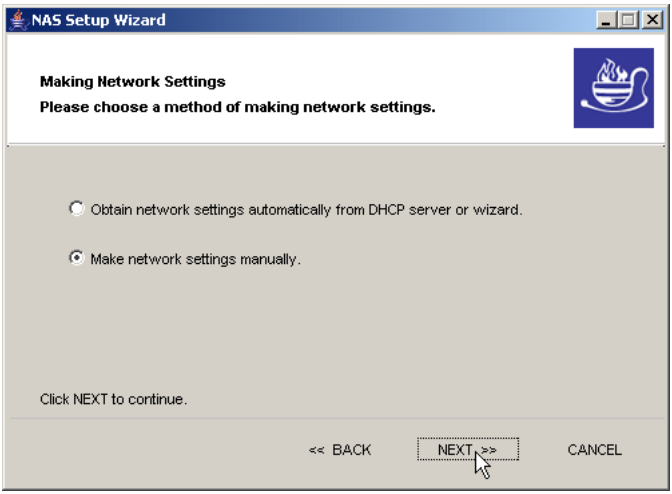
   The Time Zone, Date and Time screen appears.



7. From the dropdown menus, choose your:
   - Time Zone
   - Year
   - Month
   - Date
   - Time in hours (24 hour clock), minutes and seconds

   Click **Next >>** to continue.

   The Making Network Settings screen appears.


NAS Setup Wizard
Making Network Settings
Please choose a method of making network settings.
Obtain network settings automatically from DHCP server or wizard.
Make network settings manually.
Click NEXT to continue.
<< BACK
NEXT >>
CANCEL

8. In the Making Network Settings screen, choose one of the following:
   - **Obtain network settings automatically...** – If you have a DHCP server on your network with IP addresses available, and you want the SmartStor to obtain the network settings from the DHCP server, choose this option.
   - **Make network settings manually** – If you do not have a DHCP server, there are no addresses available, or you prefer to make your own network settings, choose this option

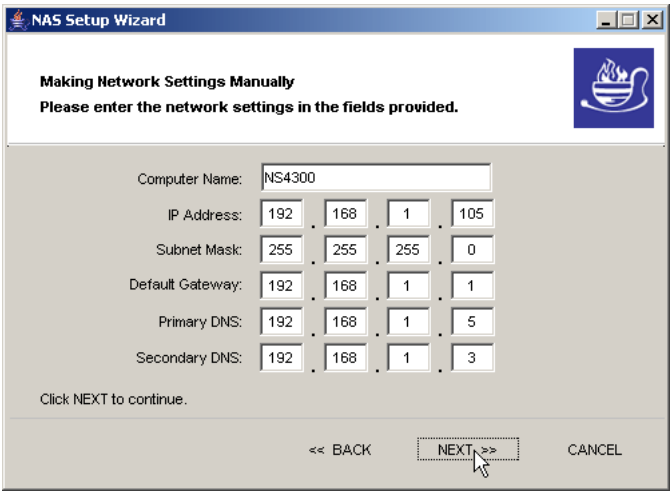
Important

If your DHCP server assigns the IP address to the SmartStor, and you later restart the SmartStor, the DHCP server might assign a different IP address.
If the SmartStor's IP address changes, your existing network drives and printer connections will no longer work. You must then create new network drives and printer connections.

Click **Next >>** to continue.

If you chose the automatic option, the Protecting Your Data Screen appears. Skip to Step 10.

If you chose the manual option, the Making Network Settings Manually screen appears.



9. Type your entries into the fields provided:
   - Computer Name – The SmartStor's Server Name in SmartSYNC
   - IP address
   - Subnet Mask
   - Default Gateway
   - Primary DNS
   - Secondary DNS

Note

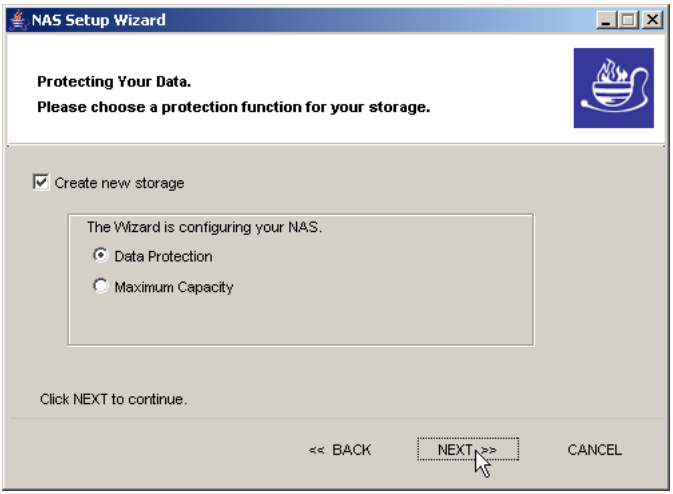
See your Network Administrator for help in making these settings.

Promise suggests that you set the first three octets of the SmartStor's IP address to match the first three octets of your PC's IP address.

After initiation, you can change your network settings in SmartSYNC or in PASM.

Click **Next >>** to continue.

The Protecting Your Data Screen appears.



10. In the Protecting Your Data screen:
    - Check the *Create new storage* box if you are setting up the SmartStor for the first time.

      The Wizard creates a RAID array, a default volume, and a default folder called *Public*.
    - UNcheck the *Create new storage* box if you already have a RAID and file system on your SmartStor.

      By unchecking the box the Wizard will leave your existing file system intact.

Caution

If you check the *Create new storage* box, the Wizard will delete all existing data and folders on the SmartStor.

If you checked the *Create new storage* box, choose one of the following options:

- **Data Protection** – Creates a fault-tolerant RAID Volume on your SmartStor. If two disk drives are installed, the Wizard creates a RAID 1 Volume. If three or four disk drives are installed, the Wizard creates a RAID 5 Volume.
- **Maximum Capacity** – Creates a RAID 0 Volume on your SmartStor. The full combined capacity of the disk drives will be available for data

storage but there will be no fault tolerance to protect your data if one of the disk drives fails.

Click **Next >>** to continue.

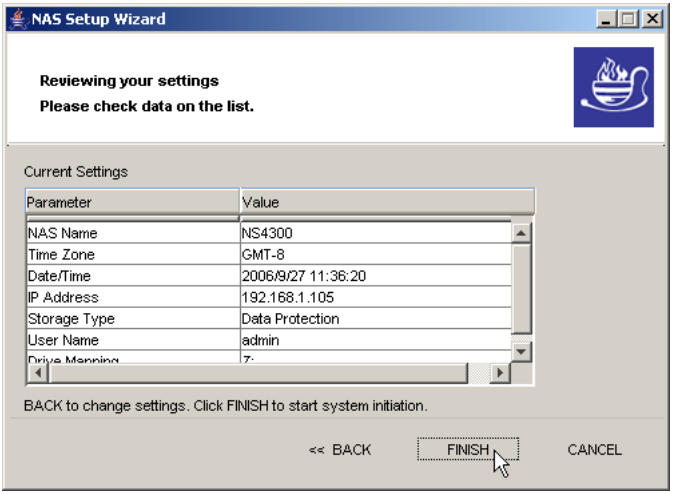
The Assigning a Network Device Name screen appears.

NAS Setup Wizard
Assigning a network device name.
The Wizard has created a shared folder "PUBLIC" for you.
Please enter a Device Name for the shared folder.
Device Name :
Z:
Click NEXT to continue.
<< BACK
NEXT >>
CANCEL

11. Select a Device Name or drive letter to represent the SmartStor as a network drive. The list begins with Z and goes in reverse alphabetical order.

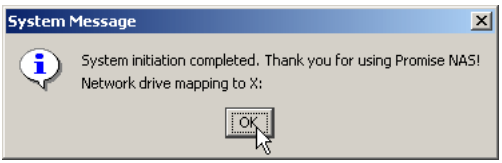
    Click **Next >>** to continue.

    The Reviewing Your Settings screen appears.



12. Review your settings and click **Finish** to begin the system initiation.

    A System Message appears.

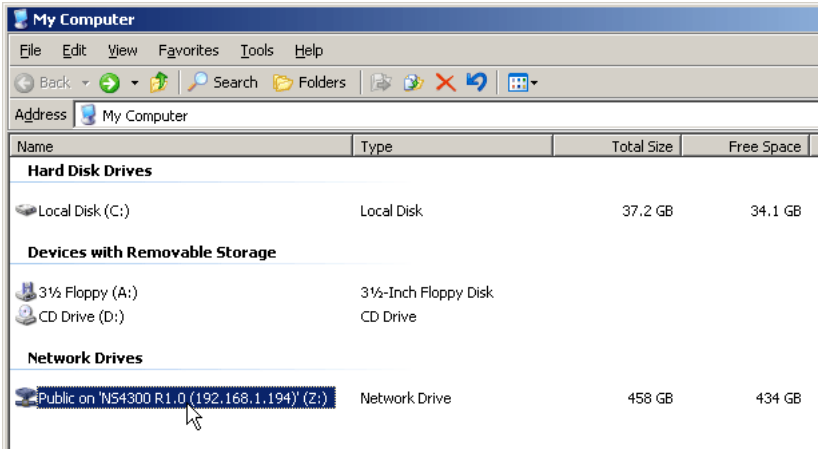


13. In the System Message, click **OK** to finish the system initiation.

    The Wizard creates a RAID Volume and a default folder called *Public*.

    If two disk drives are installed in your SmartStor, the Wizard creates a RAID 1 Volume. If three or four disk drives are installed, the Wizard creates a RAID 5 Volume.

    The Public folder on the SmartStor appears under My Computer as a network drive.


My Computer
File Edit View Favorites Tools Help
Back Search Folders
Address My Computer
Name Type Total Size Free Space
Hard Disk Drives
Local Disk (C:) Local Disk 37.2 GB 34.1 GB
Devices with Removable Storage
3½ Floppy (A:) 3½-Inch Floppy Disk
CD Drive (D:) CD Drive
Network Drives
Public on 'NS4300 R1.0 (192.168.1.194)' (Z:) Network Drive 458 GB 434 GB

    You can now copy files to and from the folder on the SmartStor.

    To access this folder from other PCs, see “Chapter 3: Connecting to the SmartStor” on page 21.

    To create additional RAID Volumes and folders, see “Adding a Folder” on page 76.

Appendix B: Maintenance

- Upgrading the Firmware (below)
- Installing Application Plug-ins (page 147)
- Connection Problems After Restart (page 148)

Upgrading the Firmware

Follow this procedure to upgrade the firmware on your SmartStor.

Downloading the Upgrade File

To download the upgrade file:

1. Download the latest firmware upgrade file from http://www.promise.com/support onto your PC.
2. Copy the firmware upgrade file from your PC to a folder on the SmartStor.

Installing the Upgrade File

1. Start the PASM interface.
2. In the Tree, click the **+** beside the **Management** icon.
3. Click the **System Upgrade** icon.
4. From the Volume dropdown menu, choose the Volume that has the folder with the firmware image file.
5. From the Folder dropdown menu, choose the Folder that contains the firmware upgrade file.
6. In the File Name field, type the name of the firmware upgrade file.
7. Click the **OK** button to begin the upgrade.

   The upgrade takes about two to three minutes.

Warning

Do not disconnect the power or shut down the SmartStor while the upgrade is running!

   When the upgrade is done, a system message appears.

8. Click the **OK** button on the system message.
9. Reboot the SmartStor.

   See “Rebooting the SmartStor” on page 146.

Rebooting the SmartStor

During the reboot, none of your folders will be accessible from your networked PCs.

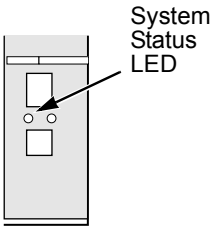
To reboot the SmartStor:

1. In the Tree, click the **+** beside the **System** icon.
2. Click the **Reboot / Shutdown** icon.
3. Click the **Reboot** option.
4. Click the **OK** button.
5. In the confirmation box, click the **OK** button.

   The reboot runs automatically. When the SmartStor is fully booted:

   - The System Status LED turns green (right)
   - The buzzer beeps one time (if the buzzer is enabled)

   See “Enabling and Disabling the Buzzer” on page 94.



Installing Application Plug-ins

Application plug-ins are enhancements to SmartStor's capabilities. The DLNA server, which enables SmartStor to support the UPnP protocol, is one example of an application plug-in.

Follow this procedure to install an application plug-in on your SmartStor.

Downloading the Plug-in File

To download the plug-in file:

1. Download the plug-in file you want from http://www.promise.com/support onto your PC.
2. Copy the plug-in file from your PC to a folder on the SmartStor.

Installing the Plug-in File

1. Start the PASM interface.
2. In the Tree, click the **+** beside the **Management** icon.
3. Click the **System Upgrade** icon.
4. From the Volume dropdown menu, choose the Volume that has the folder with the plug-in file.
5. From the Folder dropdown menu, choose the Folder that contains the plug-in file.
6. In the File Name field, type the name of the plug-in file.
7. Click the **OK** button to begin the installation.

Warning

Do not disconnect the power or shut down the SmartStor while the installation is running!

When the installation is done, a system message appears.

8. Click the **OK** button on the system message.
9. Reboot the SmartStor.

See "Rebooting the SmartStor" on page 146.

Connection Problems After Restart

If your SmartStor's network settings were set to *Obtain an IP address automatically*, your DHCP server might assign a different IP address to the SmartStor when you restart the SmartStor after is was shutdown for repairs.

This condition does not apply if you assigned your SmartStor's IP address manually.

If you experience network drive or printer connection failures, check the SmartStor's current IP address. See "Finding the SmartStor's IP Address" on page 21. If the SmartStor's IP address has changed, your previous network drives and printer connections will no longer work.

Here are two possible solutions:

- You may be able to reset the SmartStor's IP address manually. See "Changing the SmartStor's Network Settings" on page 53 or "Making Network Settings" on page 85.

  Note that changing the SmartStor's IP address may cause an IP address conflict on your network. Check with your Network Administrator before taking this action.
- If you cannot restore the previous IP address, you must create new network drives and printer connections. See "Chapter 3: Connecting to the SmartStor" on page 25.

Appendix C: GNU General Public License

This product includes copyrighted third-party software licensed under the terms of the GNU General Public License. Please see the GNU General Public License (“GPL”) for the exact terms and conditions of this license at www.gnu.org.

The GPL source code incorporated into the product is available for free download at our web site http://www.promise.com/support/download/download_eng.asp.

Subject to GPL, you may re-use, re-distribute and modify the GPL source code. Note that with respect solely to the GPL Software, no warranty is provided, we do not offer direct support for the distribution.

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